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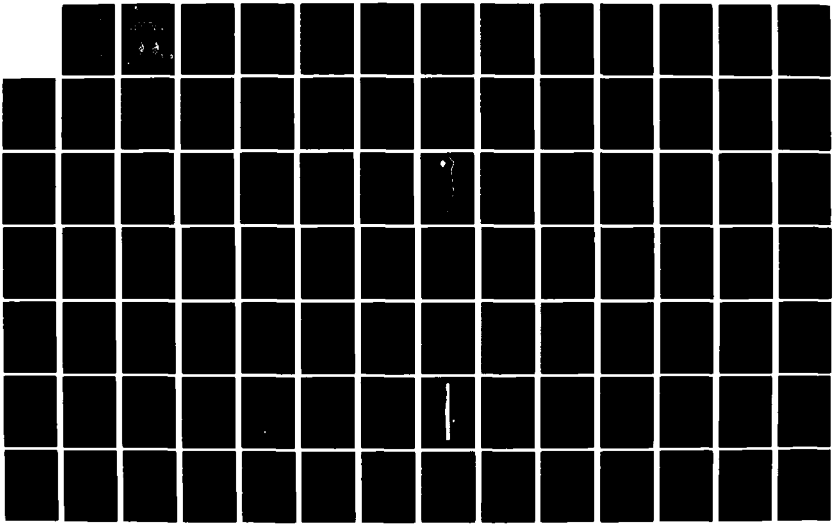

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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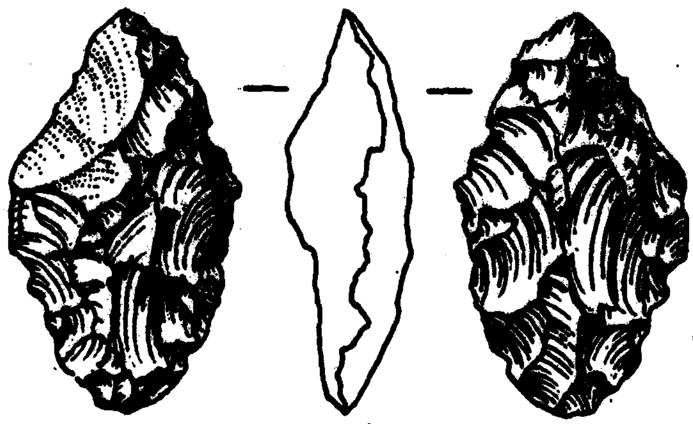
The Prehistory and Paleoenvironment of Hominy Creek Valley

1979 Field Season



Donald O. Henry

1982

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THE PREHISTORY

AND

PALEOENVIRONMENT OF

HOMINY CREEK VALLEY

1979 FIELD SEASON

Donald O. Henry

Artifact Illustrations

LUCILE ADDINGTON

LABORATORY OF ARCHAEOLOGY
DEPARTMENT OF ANTHROPOLOGY
UNIVERSITY OF TULSA

1982

SKIATOOK LAKE PROJECT
DACW56-77-C-0222

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ABSTRACT

The investigation of 12 prehistoric sites in Hominy Creek Valley within the proposed area of Skiatook Lake defined Plains Archaic, Plains Woodland, and Plains Village Period components. Plains Archaic Period occupations were determined not to be in primary context, while it was established that the large Plains Woodland Period sites located on the valley floor were expressions of intermittent reoccupations by small groups rather than village sites. The study also provided further clarification of the correlation between the cultural-historic and alluvial sequences of the valley. Additional palynological evidence was also obtained in an effort to reconstruct the Late Prehistoric environment of the valley.

INTRODUCTION

During 1979 and 1980, an archaeological investigation was conducted in Hominy Creek Valley of northeast Oklahoma in the area of the proposed Skiatook Lake (Figure 1). The study, representing Phase III of the multi-phase project, entailed the excavation of two sites (34OS92 and 34OS160) and test excavations at 11 sites (34OS94, 34OS95, 34OS102, 34OS103, 34OS111, 34OS112, 34OS113, 34OS115, 34OS116, 34OS120, 34OS141).

The original scope of services which was developed in 1977 for the Phase III investigation called for test excavations at 14 sites. The studies conducted during Phase I and Phase II, however, resulted in a modification of the original plan and indicated a need for excavation of 34OS92 and 34OS160 in addition to test excavations at 11 sites during the Phase III investigation. The Phase III investigation was further modified during the course of the fieldwork when access to certain sites was denied because they were under crops. In an effort to overcome this problem sites scheduled for testing during Phase IV were substituted for sites scheduled for testing during Phase III. Sites 34OS103, 34OS120, and 34S141 were substituted for 34OS117, 34OS118, and 34OS119.

General Goals and Conceptual Framework

The Phase III investigation followed the program of study that was advanced in 1976 for the multi-phase archaeological study of Hominy Creek Valley (Henry, 1977a:1-5). The program focuses on the definition of adaptive strategies throughout the prehistoric occupation identified for the valley. In order to address this overall goal the investigation plan stresses the recovery, analysis, and synthesis of evidence which is related to the development of detailed paleoenvironmental and cultural-historical sequences for the area. The generation of these sequences is viewed as an initial step in examining

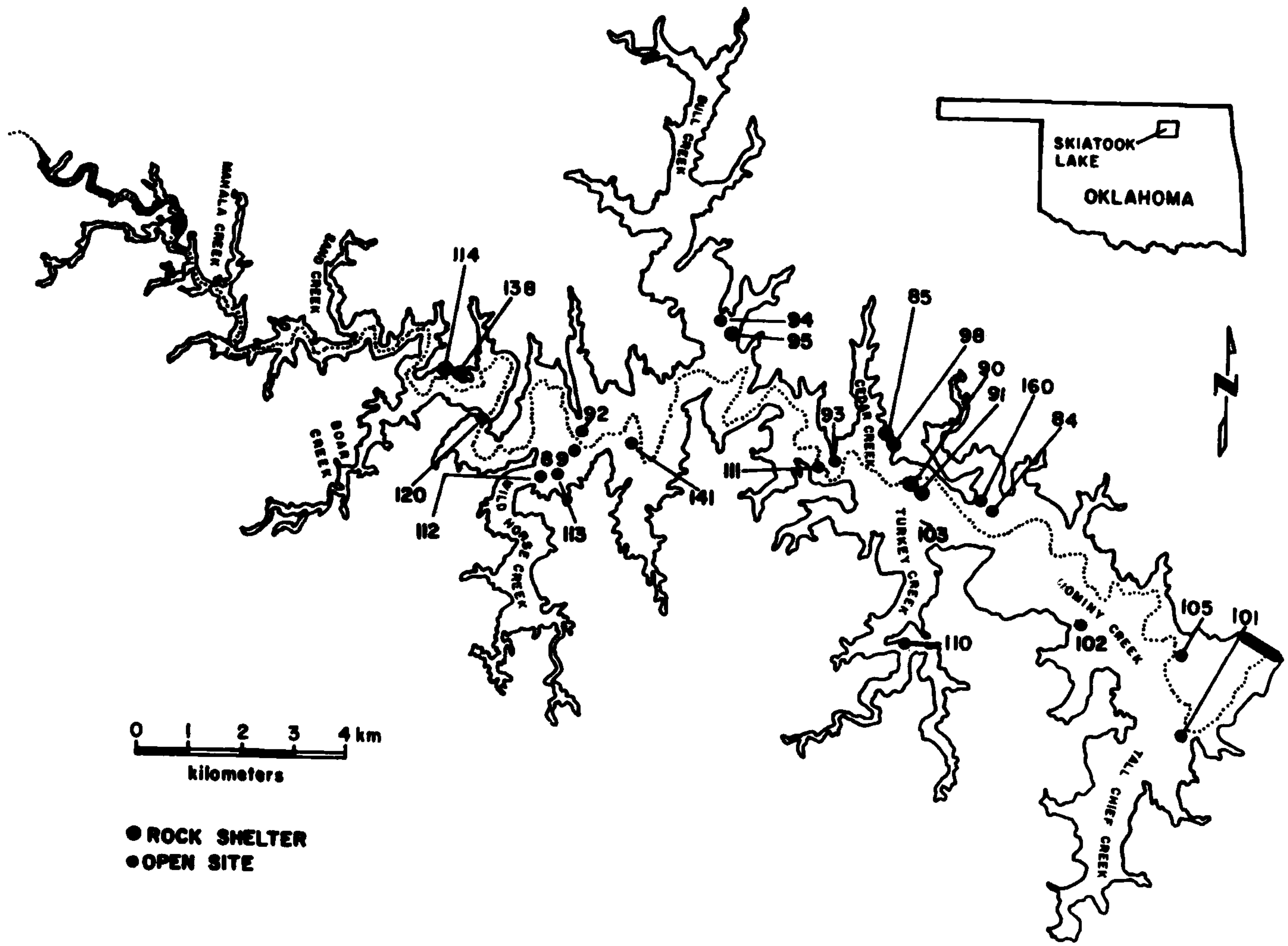


FIGURE 1; Map of Hominy Creek Valley Showing Locations of Investigated Sites

the interrelationship of the inhabitants of the valley and their environment for much of the prehistoric past.

Although the overall design for the study of Hominy Creek Valley is admittedly problem oriented, the "problem" is of such a general nature that primary archaeological evidence is not sacrificed by addressing the overall goal of the study. The investigation seeks to balance the recovery and concomitant conservation of a broad range of primary archaeological evidence with the integration of this evidence into the interpretative fabric of prehistoric human ecology.

Prehistoric Adaptive Strategies

Hominy Creek Valley provides an ideal study area for the examination of prehistoric adaptive strategies as a result of the temporal span of the prehistoric occupations and the physiographic setting of the valley. The prehistoric occupation of the valley encompasses a period which is associated with the transition from hunting and collecting to food production. Within the region, the Plains Woodland Period (ca. A.D. 1-800) is traditionally viewed as having been economically transitional between Archaic Period hunters and gatherers and Plains Village Period horticulturalists. The adoption of food production as an augmentation to a hunting and gathering economy clearly represented an important change in the adaptive strategy of Late Prehistoric populations in the region.

The valley is located in a zone of low oak-covered hills which form a boundary between the grasslands of the Plains to the west and the oak-hickory forests to the east. In that the valley is situated in an environmental transition zone, subtle differences in relief, exposure and available moisture have created a complex mosaic of microenvironments which contain plant communities

characteristic of the major grassland and forest zones that are peripheral to the valley. The boundary position of the valley in relation to grassland and forest zones makes for an environmentally sensitive area in respect to climatic changes. One would suspect that both zonal and microenvironmental vegetational shifts took place in concert with past changes in temperature and precipitation patterns. Subtle climatic changes would have resulted in microenvironmental shifts within the valley. During more moist intervals the elm-ash-cottonwood forest of the valley floor and the oak-hickory forest of the valley flanks would have expanded upslope, while drier episodes would have resulted in the recession of these microenvironments commensurate with the expansion of the more xeric scrub oak forests and grasslands of the uplands into the valley. Dramatic climatic changes would have induced major zonal shifts in vegetation patterns. In order to have had an impact on the distribution of major environmental zones, climatic oscillations would have had to have induced sustained and marked changes in precipitation and/or temperature patterns. The wide variations in modern annual temperature and precipitation patterns have not caused major shifts in environmental zones. For example, modern meteorological data confirms that although annual precipitation averages about 850mm, two years out of ten receive less than 650mm and two years out of ten receive greater than 1050mm. During the past episodes of significantly moisture conditions, the oak forest belt of "Cross-Timbers", which forms the boundary between the Plains grasslands and the oak-hickory forests to the east, would have migrated westward. Markedly drier conditions in the past, however, would have induced an eastward retreat of oak and oak-hickory forests at the expense of a retreating grassland.

Previous Investigation in the Region

In the last two decades a considerable number of archaeological studies have been initiated in the region (Figure 1). The development of impoundments on the tributaries within the Verdigris and Arkansas River basins have produced most of the investigations into the prehistory of the Osage Plains. As a result of the inherent topographic bias of these investigations toward valley floor and flank settings, upland surveys such as those conducted along Salt Creek (Vehik et al, 1979) are particularly welcome.

Within the Verdigris River basin archaeological investigations have been conducted at the Toronto Rservoir on the Verdigris River (Howard, 1964), the Elk City Reservoir on the Elk River (Marshall, 1972), Copan Lake on the Little Caney River (Rohn and Smith, 1972); Vaughn, 1975; Henry, 1977a; Keyser and Farley, 1979; Vehik and Pailes, 1979: Prewitt, 1980 in press). Oolagah Lake on the Verdigris River (Prewitt, 1968), Birch Lake on Birch Creek (Barr, 1964; Perino, 1972b; Henry, 1977b; Henry et al, 1979), the Skiatook Lake on Hominy Creek (Rohrbaugh and Wyckoff, 1969; Perino, 1972a; Gettys et al, 1976; Henry, 1977c, 1978a, 1978b, in press), Candy Lake on Candy Creek (Cheek and Wilcox, 1974; Leehan, et al, 1977), and Sand Creek Impoundment on Sand Creek (Bobalik, 1976).

Along the Arkansas River considerable archaeological research has been completed at Kaw Lake (Wyckoff, 1965; Bastain, 1969; Rohrbaugh, 1974; Harley, 1975a, 1975b) and preliminary surveys have been initiated along Salt Creek (Neal, 1975; Vehik, et al, 1979).

As a result of these studies, a number of fundamental gaps in the archaeological record can be identified. The definition and subsequent

correlation of discrete archaeological units with specific cultural-historic entities remains a critical unresolved problem. While a growing number of radiocarbon dates and stratigraphic sequences have assisted in bringing greater chronologic resolution to the archaeologic successions, specific cultural relationships on a regional level remain unclear. Furthermore, a near absence of paleoenvironmental evidence hinders attempts to deal with prehistoric adaptive strategies. It is in these areas that an increased effort should be made to obtain information.

Previous Investigations in Hominy Creek Valley

Beginning over a decade ago, the archaeological investigations in the area of the proposed Skiatook Lake have resulted in the discovery of 45 archaeological sites. Aside from a single historic burial (Perino, 1972a), the sites represent archaeological occurrences which are primarily associated with Late Prehistoric occupations that date between A.D. 1-1,500. These Plains Woodland and Plains Village Period occupations furnish the majority of evidence for the prehistory of the valley although a few Archaic Period occurrences have been recorded. Besides being relatively rare, none of the Archaic Period sites appear to be in primary archaeological context.

The paucity of Archaic Period and earlier prehistoric occurrences in the valley appears to be more a result of geologic processes rather than a direct expression of the valley's demography prior to the first millenium A.D. The varius erosional cycles in the uplands and the formation of thick alluvial units on the floodplains of the tributaries within the Verdigris River drainage system have acted to remove many of the prehistoric sites in the uplands and bury those in floodplain settings. The cave and rockshelter occupations of the

valley are restricted to the Late Prehistoric Period as well. In that most of the sheltered sites exhibit Late Prehistoric age deposits that rest directly on bedrock, it would appear that most of the caves and rockshelters in the valley were formed in the late Holocene. A few sheltered sites display thick deposits beneath Late Prehistoric Period horizons, but even these sites failed to furnish evidence of earlier occupations. The absence of Archaic Period horizons in these deep deposits may be related to climatic factors which made the sites uninhabitable.

The majority of the Late Prehistoric sites in the valley contain multi-component occupations representing Plains Woodland and Plains Village horizons. Several sheltered sites provide well dated stratified sequences which denote a Plains Woodland-Plains Village transition at around A.D. 800 (Henry, 1978a, 1978b). The transition is associated with the appearance of side-notched points and smooth-surface shell tempered pottery, but there is general continuity between Plains Village and Plains Woodland Period occupations in respect to overall material culture.

While the transition from Plains Woodland to Plains Village Period occupations in Hominy Creek Valley was roughly synchronous with the transition observed elsewhere on the Southern Plains, the Late Prehistoric inhabitants of the valley do not appear to have experienced the marked economic and demographic changes which were associated with this cultural transition elsewhere (Henry, 1978a, 1978b). A broad-spectrum hunting and gathering economy apparently prevailed throughout the Woodland and Plains Village periods accompanied by a continuity in settlement pattern. The Late Prehistoric inhabitants of valley failed to adopt horticultural practices which were common to other contemporary groups within the region. The persistence of a broad-spectrum hunting and

gathering adaptive strategy into the Proto-Historic Period may have been an expression of the equilibrium between resources and population. Although a similar settlement pattern appears to have obtained for the valley's Plains Woodland and Plains Village Period inhabitants, the chert varieties from which their Plains Woodland artifacts were manufactured suggest stronger downstream, eastern movement or contact.

Goals of the 1979, Phase III Investigation

During the Phase II investigation the focus of the archaeological study of Hominy Creek valley shifted from cave and rockshelter sites to open sites on the valley's floor and flanks (Henry, 1980). The emphasis upon open-sites allowed for the integration of the well dated cultural-historical and paleoenvironmental sequences obtained from the sheltered sites with the depositional history of the valley. The Phase II report represented an initial step in synthesizing and summarizing the geologic, environmental, and cultural-historic successions rcognized for the valley and Verdigris River Basin (Henry, 1980).

In Phase III the emphasis on open-site excavation continued with only one sheltered site (34OS95) being investigated. The Phase III study was directed toward:

(1) discerning whether the large open sites of 34OS92 and 34S160 were long-term or short-term encampments.

(2) refining the correlations between cultural-historic and alluvial sequences through test excavations of a series of valley floor sites.

(3) evaluating the archaeological significance of these sites through test excavation.

Many of the sites located on the valley floor displayed artifact con-

centrations over exceedingly large areas and often to considerable depth (over 2m). While the size and depth of these sites suggest considerable permanence of settlement, their relative artifact densities and configurations are viewed as expressions of ephemeral encampments (Henry, 1978). In an effort to evaluate whether such sites resulted from extended occupations by large groups of inhabitants or whether they merely reflected numerous intermittent ephemeral encampments by small groups, an extensive excavation of the Williams Site (34OS160) was undertaken. In an attempt to identify features (postmolds or floors), superimposed artifact concentrations or other evidence (e.g. daub) indicative of permanent occupation of the site, three large areas were excavated. When obvious living surfaces (normally identified by burned sandstone) were encountered, larger artifacts were left in place and mapped for subsequent examination of distributional patterns. A similar approach was intended for the investigation of the Oxbow Site (34OS92) as its cultural-historical affiliation and geomorphic setting appeared to be the same as the Williams Site (34S160). Unfortunately, the Oxbow Site (34OS92) failed to furnish the necessary densities or depth of cultural material to address these problems.

The test excavations on the other floodplain sites were conducted to identify the specific geomorphic placement of the occupations within the depositional history of the valley and to recovered temporally diagnostic artifacts and/or datable material. Through the investigation of these sites the sequence of geomorphic and cultural-historic events, as advanced in the Phase II report, could be evaluated. The test excavations also provided practical information on the artifactual inventory, sub-surface extent, and archaeological context of the sites. Evidence in these areas is viewed as a prerequisite to making an informed decision on whether additional investigations at the sites are warranted.

SITE REPORTS

Donald O. Henry and Foster E. Kirby

This section includes the description of the excavation strategy, stratigraphy, features, and the material culture associated with the 13 sites investigated during the Phase III study. While the section is primarily descriptive in nature, limited discussion is presented in respect to cultural-historic affiliation and intra-site patterns, when applicable. The final section of this report focuses on the synthesels and interpretation of inter-site patterns.

Methodology

The methodology employed in the Phase III investigation was consistent with the excavation and analytic techniques which were utilized in the previous studies (Henry, 1977c, 1978a, 1980). Topographic maps were made for the investigated sites with the excavated units indicated on the maps. Excavation units consisted of one meter squares which were sub-divided into four quadrants (50cm on a side) in large block excavations. The units were excavated in arbitrary 10cm thick intervals unless clear natural layers were encountered. The excavation levels were either controlled from a datum (i.e. below datum-bd) or from the surface (i.e. below surface-bs) depending upon the terrain and subsurface layers of a site. All of the excavated fill was screened through 1mm mesh in the field or the laboratory.

Given the scarcity of pottery, worked bone, and other cultural materials, the analysis of recovered artifacts primarily focused on chipped stone elements. A rather traditional classification of chipped stone tools into classes (e.g. scrapers, points, burins, etc.) and types (e.g. thumbnail end scraper, Scallorn point, dihedral burin or snap, etc.) was applied. Non-tool elements were

classified according to a reduction sequence which is based upon specific morphological characteristics that represent various stages of manufacture. Five classes of non-tool elements were recognized: cores, primary elements, secondary elements, tertiary elements, and bifacial thinning elements. The classes are defined as follows:

Cores - represent those pieces of raw material from which one or more flakes have been struck.

Primary elements - consist of those spalls which display dorsal (obverse) surfaces that are entirely covered by cortex.

Secondary elements - include thoses spalls exhibiting both cortex and flake scars on their obverse surfaces.

Tertiary elements - are those spalls which evince a totally flaked obverse surface.

Bifacial thinning elements - constitute those spalls which display lipped bulbs of percussion, acute angles at the intersections of their platforms and dorsal surfaces, and multi-facetted platforms.

These classes are, in general, representative of the various stages in the reduction sequence of a lithic technological system. That is to say, cores initiate the sequence and are followed by the production of primary, secondary, tertiary, and finally bifacial thinning elements. Although, on occasion, certain elements may be produced out of sequence, these elements will not distort the overall reconstruction of a reduction sequence as revealed by large samples.

In addition to the typological and technological observations which were made on the recovered chipped stone specimens, an attempt was made to classify the artifacts according to the raw material from which they were fashioned. Given the absence of chert or flint sources in Hominy Creek Valley, the iden-

tification of these sources which were used outside the valley provides significant information on the external contacts and interaction of the valley's prehistoric inhabitants.

Five major varieties of chert were used by the prehistoric groups in the valley. Additionally a few obsidian specimens were recovered from Woodland period occurrences. The lithological descriptions, geologic proveniences, and areal distributions of the cherts have been extensively discussed (Banks, undated MS; Skinner, 1957; Greig, 1959; Neal, 1972; Henry, 1977a; Vehik et al, 1979). Unfortunately, the various terms which have been used to designate the chert varieites have generated some confusion. In this report, as elsewhere (Henry, 1977a, 1977b, 1977c, 1978a, 1978b, 1980), a system of nomenclature following that of Banks (undated MS) is employed (Table 1). This system follows a geologic nomenclature as opposed to local place names.

The chert varieties of the artifacts were identified through comparison of the artifacts with chert samples collected from their sources. In addition, the chert samples were heated at various temperatures and durations in a sand buffer to evaluate the effects of thermal alteration. Of the four cherts evaluated, Florence was most sensitive to thermal alteration in that it developed a vitreous lustre and red-pink hues at relatively low temperature (350°-400°C.) and brief heating intervals (2 hours). Keokuk chert samples revealed subtle changes in color and lustre after annealling while both Neva and Foraker exploded or showed signs of fire-crazing at low temperatures (400°C.)

TABLE 1

THE MAJOR ATTRIBUTES, GEOLOGIC PROVENIENCE, AND TYPE LOCALITIES OF CHERT VARIETIES.

Variety	Description	Provenience	Locality
FLORENCE (Kay County)	Fine to medium grained, tan-yellow to blue grey, dark concentric bands, echinoid spines, crinoid plates, ostracods, and fusilinid inclusions	Barneston Formation Florence Member	Hardy, Oklahoma to Maple City, Kansas
FORAKER (Shidler, Salt Creek)	Fine to medium grained, tan to blue grey, white fossil, inclusions consist of fusilinids and crinoid fragments	Foraker Formation	Shidler, Oklahoma
NEVA	Fine grained tan to blue grey, slightly vitreous lustre, inclusions composed of echinoid spicules, foraminifera and fusilinids	Grenola Formation Neva Member	Northern Pawnee County, Oklahoma
KEOKUK (Boone)	Fine to coarse grained, white to blue grey, dark blue to black, vitreous lustre	Keokuk Formation	much of NE Oklahoma - east of Neosho River
TAHLEQUAH (Peoria)	Fine grained white, light grey, pink vitreous lustre	Moorefield Formation Tahlequah Member	much of NE Oklahoma

THE OXBOW SITE (34OS92)

The Oxbow site was first reported by G. Perino in 1972 and was collected and tested by the University of Tulsa in 1978 (Henry, 1980). The site is located on a high knoll of land in a plowed field (floodplain) on the eastern side of Hominy Creek directly adjacent to the confluence of Wildhorse Creek and the larger Hominy Creek (Figure 1). The site is found on the northern and southern sides of a remnant Hominy Creek oxbow which seasonally contains wate·. The site is approximately .5km north from the present stream. Burned sandstone and chert materials brought to the surface and scattered by numerous plowings attest to the presence of the site. Results of the 1978 testing and surface collection suggested that the higher ground on the southern side of the oxbow might contain *in situ* cultural deposits that in addition to recoverable artifact materials might contain undisturbed features.

Description of Excavation and Stratigraphy

Work on this site was impeded somewhat by the presence of a maturing soybean field. Two areas on the highest part of the knoll were chosen for block excavation (Figure 2). The southernmost block measured 2m x 2m while the second block 10m further to the north was a 2m x 3m unit. Excavation was carried out utilizing 50cm square quadrants and 10cm arbitrary levels. All excavated matrix was transported to the creek for waterscreening through 1mm mesh. The average excavation depth was 50cm below surface. The stratigraphy was extremely simple with the upper 20-25cm comprising a distinct plow zone which is underlain by a sandy-silt with a noticeable clay fraction that on the basis of auger tests is over a meter and a half in depth. The whole of the knoll is mapped as falling within the Wynona soil series (Bourlier, *et al*, 1979).

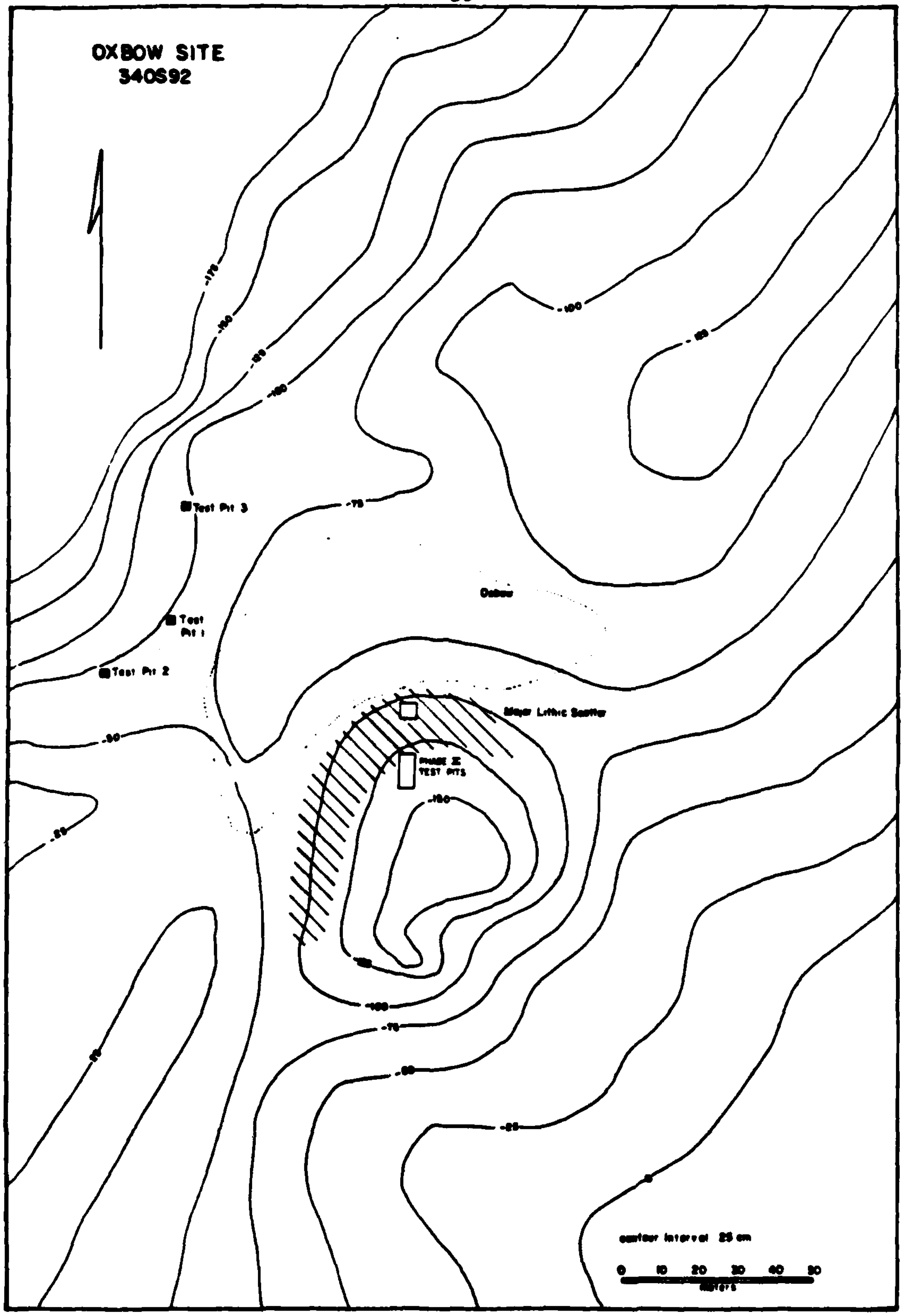


Figure 2. Site Map of the Oxbow Site (340S92)

Material Culture

The artifactual inventory recovered from the Oxbow Site consists solely of chipped stone elements. During the Phase III investigation, a total of 387 specimens were recovered from the excavation with only one tool being recorded (Table 2). The noticeable paucity of cultural material in the upper 20-30cm of the deposit may reflect the lateral dispersal of artifact concentrations within the plow zone. The disturbance from plowing and subsequent sheet erosion associated with the cultivated surface would have acted to diffuse the artifact concentrations, which define prehistoric encampments, over a much larger area. The marked increase in artifact density at the 30-40cm level (Table 2) would appear to be an expression of an undisturbed horizon just beneath the plow zone. Unfortunately, the site is relatively shallow, extending only 40-50cm beneath the surface, and only limited areas remain undisturbed.

The combined tool assemblage recovered from test excavations and surface collections of Phase II and Phase III investigations is too small for meaningful intra-site or inter-site comparisons (Table 3). Although the tool assemblage of 17 specimens is clearly inadequate for most forms of analysis, a few temporally diagnostic specimens were recorded. The dart points and bifaces indicate a late Archaic or Woodland Period occupation.

Scrapers consisted of a specimen displaying scraper retouch bilaterally as well as on the distal end and a simple side-scraper on a blade (Figure 3:b and e). A simple perforator on a secondary element and a fragment of a drill bit (Figure 3:a) were also recovered. Four retouched pieces which included two with abrupt continuous obverse unilateral retouch and two with normal continuous obverse unilateral retouch represented the class. Bifaces consisted of a complete rather thick ovate specimen (Figure 3:f) in conjunction with two

TABLE 2

Non-tool Element Densities, Counts, and Frequencies from the Oxbow Site (340S92). Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.S.	Non-Tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
0-10	1.6	0	-	1	6.3	15	93.7	0	-	0	-	16
10-20	1.1	0	-	0	-	11	100.0	0	-	0	-	11
20-30	11.9	0	-	2	2.1	88	92.6	5	5.3	0	-	95
30-40	26.8	0	-	2	0.9	205	95.8	7	3.3	0	-	214
40-50	6.3	0	-	0	-	49	98.0	1	2.0	0	-	50
Total		0	-	5	1.3	368	95.3	13	3.4	0	-	386

TABLE 3

Combined Tool Assemblage from the
Oxbow Site (34OS92) during the Phase II and Phase III Excavations

Group	N	%
Scraper	2	11.8
Perforator	1	5.9
Drill	1	5.9
Retouched Piece	4	23.5
Biface	3	17.6
Dart Point	4	23.5
Point/Biface	2	11.8
Total	17	100.0

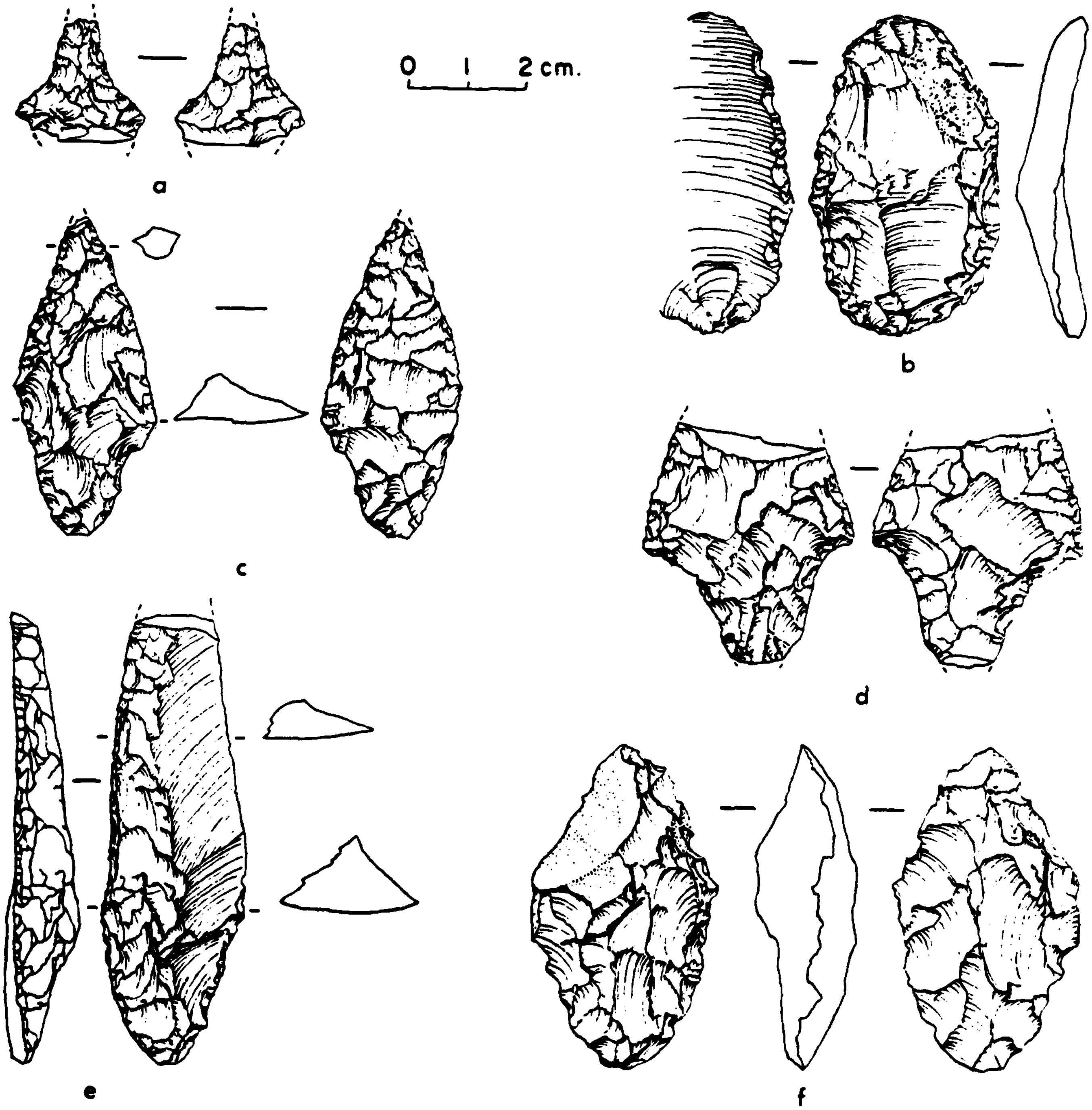


FIGURE 3: Selected Chipped Stone Tools from the Oxbow Site (34OS92) Drill Bit (a), Gary points (c,d), Scrapers (b,e), Ovate biface (f).

fragmentary pieces. Four dart points were found including two Gary points (Figure 3:c and d). One of these is missing a lateral shoulder as a result of a single blow on one face (Figure 3:c). The other dart points are fragmentary and untypeable. Two fragmentary bifacially retouched specimens, attributed to either points or bifaces were also identified.

The low frequencies of secondary elements and absence of cores and primary elements indicate that little if any initial processing of chipped stone tools was undertaken at the site. In contrast, the relatively high frequencies of tertiary and bifacial thinning elements confirm an emphasis on final processing of tools. The final processing probably stressed the maintenance and rejuvenation of tools as opposed to their fabrication.

Raw Material Varieties

The chipped stone artifacts recovered during the Phase III investigation were almost exclusively fabricated from Florence Chert which had been thermally altered (Table 4). Surprisingly only about 25% of an assemblage of 110 specimens, recovered during the Phase II investigation, was made of Florence Chert (Henry, 1980: Table 23). The Phase II assemblage consisted of about 75% Keokuk Chert.

The different patterns in chert utilization between the two assemblages may be a sampling bias as the Phase III assemblage is some three times larger than the Phase II assemblage. The differences may also be attributed to the two investigations encountering the remains of different occupational episodes and areas on the site.

Cultural-Historic Affiliation

The presence of dart points and bifaces suggests a late Archaic or

TABLE 4

Raw Material Varieties from The Oxbow Site (34OS92).

	N	Florence	Foraker	Keokuk	Tahlequah	Neva	Heat-treated
0-10 B.S.							
Tools	1	100.0	-	-	-	-	100.0
Non-tools	16	93.8	-	6.2	-	-	93.8
10-20 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	11	72.8	-	27.3	-	-	100.0
20-30 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	95	94.7	-	5.3	-	-	100.0
30-40 B.S.							
Tools	0	-	-	-	-	-	-
Non-Tools	214	99.1	-	0.9	-	-	100.0
40-50 B.S.							
Tools	0	-	-	-	-	-	-
Non-Tools	50	100.0	-	-	-	-	98.0
Total							
Tools	1	100.0	-	-	-	-	100.0
Non-Tools	386	97.2	-	2.8	-	-	99.5

early Plains Woodland horizon for the site. The geomorphic setting of the site represents a terrace remnant which post-dates the Archaic age surface of the Skiatook Paleosol (Henry, 1980) and pre-dates middle Woodland age alluvium which forms a lower terrace as at the Williams Site (34OS160). The geomorphic setting is thus in concert with the proposed late Archaic-early Woodland age of the occupation.

Summary and Conclusions

Although the Oxbow Site (34OS92) displays sporadic concentrations of artifacts over some 5,000m^2, the large area appears to reflect numerous intermittent occupations by small late Archaic or Woodland period groups rather than a large permanently occupied encampment. The artifactual remains of the small, briefly occupied encampments have been further dispersed by ploughing and sheet erosion.

SITE 340S94

Based on an assessment of its geomorphic setting, Rohrbaugh and Wycoff (1969) suggested that this locality be tested for subsurface archaeological features. The area is located northwest of the confluence of Bull Creek and a small unnamed tributary and some 2km upstream from the confluence of Bull Creek and Hominy Creek (Figure 1). Several sets of terraces were investigated through shovel tests and intensive surface reconnaissance. No cultural materials were found. Six formal units, 0.5m x 0.5m, were excavated in 10cm arbitrary levels and the matrix bagged and transported to the lab for fine-screen waterscreening. No artifacts were recovered in this manner. Therefore, an archaeological site cannot be confirmed.

However, during investigation of the locality, at least one and perhaps two buried soils were found in an erosional cut. The locality soil is considered to be of the Barnsdall Series and is very fine silty loam. Further analysis is necessary to determine whether this is a floodplain facies of the "Copan" paleosol.

BULL CREEK SHELTER (34OS95)

Bull Creek Shelter is a rockshelter located in a cliff face 50m northeast of the confluence of an unnamed tributary with Bull Creek (Figure 1). The west-facing shelter is situated approximately 10m above the Bull Creek floodplain and cverlooks the area tested for site 34OS94. The shelter runs about 18m north-south and has a width which varies from 2m to 6m (Figure 4). The floor area of the shelter is estimated 75m^2 with approximately one-fifth of this area covered by rockfall. The ceilng is generally level with a height greater than two meters throughout most of the shelter. A well defined dripline has been formed, and it bisects the shelter floor along its north-south axis.

Two bedrock mortars are found on two large rooffall blocks within the confines of the shelter (Figure 4). The larger of the two has a diameter of 10cm with a depth of 9cm while the smaller mortar is 7cm in diameter and 4cm deep.

Dense vegetation obscures a view of the shelter from below. Access to the shelter both from the creek, as well as from above, is extremely difficult.

Description of the Excavation

Selection of test excavation locations was determined by the absence of rooffall as well as the desire to test areas in front of and behind the dripline. A 4m x 1m trench, excavation in 50cm square quads in 10cm arbitrary levels, was set out running east-to-west from the back of the shelter to its front drop-off. A second test (.05m x 1m), oriented on a north-south axis was placed near the center of the shelter inside the dripline. Collected matrix was transported to the creek on a zipline apparatus for fine (1mm) waterscreening and artifact collection. All units were taken down to bedrock which was at shallow depths in the eastern units and about 60cm in depth in the westernmost quads.

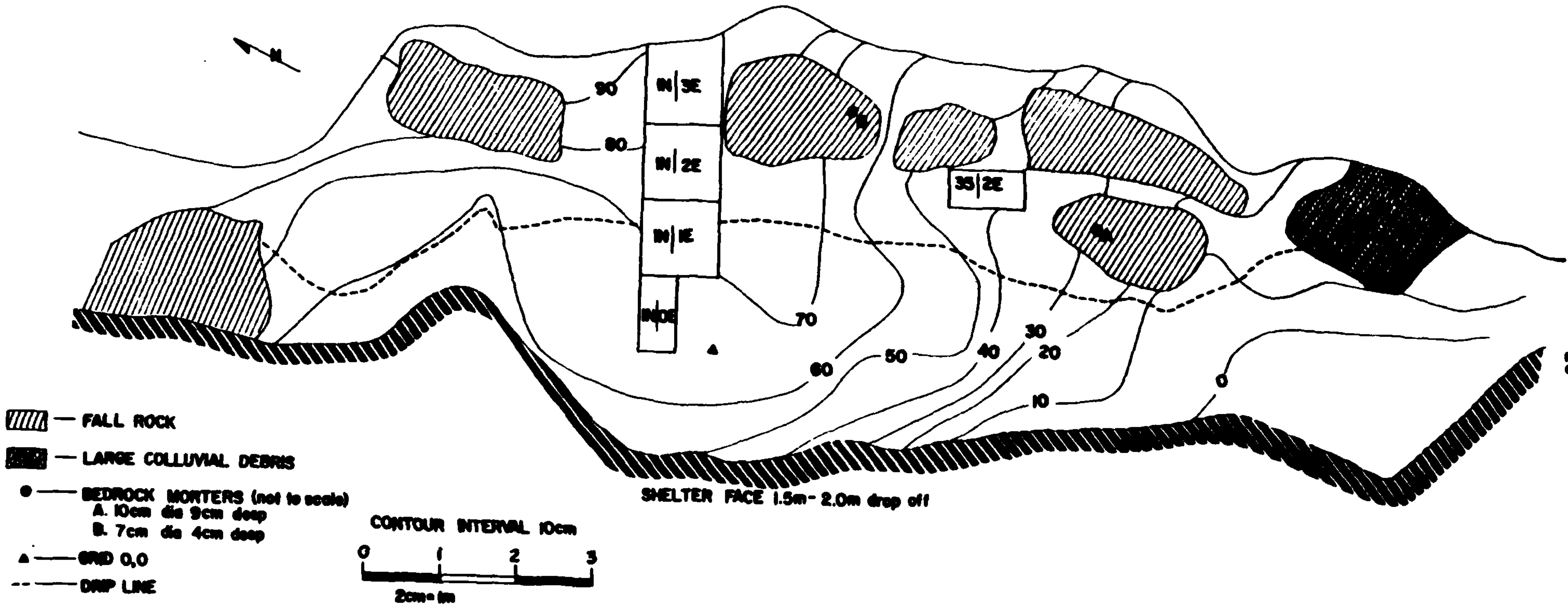


FIGURE 4: Site Map of Bull Creek Shelter (34OS95)

The sediment matrix is a mixture of eroded sand-sized particles combined with aeolian silt-sized materials. The sediments were homogenous throughout the profile with the only differences being in the amounts of rooffall debris which increased with depth and position in the shelter with respect to the dripline. More debris was located on and beyond the dripline than was present in the interior of the shelter. Some colluvial materials are present at the northern and southern ends of the shelter where they have washed in from above.

Material Culture

The artifactual inventory recovered from the test excavations consisted solely of chipped stone artifacts. The assemblage included only 6 tools and 196 non-tool elements.

The tools embraced a flake with marginal inverse retouch, a fragment of a biface, two point tips. and two small points. One of the specimens resembles a Fresno point, while the other appears to be a nearly completed preform also of a Fresno point.

The non-tool inventory, dominated by tertiary and bifacial thinning elements, suggests an emphasis on the final stages of lithic reduction by the site's inhabitants (Table 5). The densities of the non-tool elements display peaks near the middle and at the bottom of the deposit, thus implying two episodes of intensive occupation of the site.

Raw Material Utilization

An examination of the chert varieties, from which the lithic artifacts were fabricated, indicates that Florence and Keokuk were the preferred varieties with the latter predominating (Table 6).

TABLE 5

Non-tool Element Densities, Counts, and Frequencies from 340S95. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.D.	Non-Tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
38-50	0.3	0	-	0	-	1	100.0	0	-	0	-	1
50-60	9.5	0	-	2	10.5	16	84.2	1	5.3	0	-	19
60-70	39.6	0	-	2	2.0	92	92.9	5	5.1	0	-	99
70-80	4.6	0	-	0	-	8	100.0	0	-	0	-	8
80-90	10.0	0	-	0	-	14	93.3	1	6.7	0	-	15
90-100	108.0	0	-	0	-	46	85.2	7	13.0	1	1.9	54
100-110	0.0	0	-	0	-	0	-	0	-	0	-	0
Total		0	-	4	2.0	177	90.3	14	7.1	1	0.5	196

TABLE 6

Raw Material Varieties from 34OS95.

	N	Florence %	Foraker %	Keokuk %	Tahlequah %	Neva %	Heat-treated %
38-50 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	1	100.0	-	-	-	-	100.0
50-60 B.D.							
Tools	3	33.3	-	66.7	-	-	66.7
Non-tools	19	63.2	-	36.8	-	-	94.7
60-70 B.D.							
Tools	2	100.0	-	-	-	-	100.0
Non-tools	99	33.3	1.0	61.6	4.0	-	90.9
70-80 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	8	12.5	-	87.5	-	-	75.0
80-90 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	15	26.7	-	73.3	-	-	80.0
90-100 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	54	46.3	-	42.6	11.1	-	85.2
100-110 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-
Total							
Tools	5	80.0	-	20.0	-	-	80.0
Non-tools	196	38.8	0.5	55.6	5.1	-	83.2

Cultural-Historic Affiliation

On the basis of the two Fresno points, Bull Creek Shelter would appear to have been occupied during the Plains Village period. The presence of deep hole conical bed rock mortars is also consistent with a Plains Village Period occupation.

Summary and Conclusions

The Plains Village Period occupation of Bull Creek Shelter is similar to a pattern displayed within Hominy Creek Valley and other valleys within the area. Rockshelters and caves within the valleys yield meager chipped stone assemblages suggestive of tool maintenance and rejuvenation activities. Bedrock mortars and grinding surfaces are common features within the sites, as well. Although Bull Creek Shelter failed to yield organic evidence for use as a seasonal indicator, other sheltered sites occupied during Plains Village times in Hominy Creek, Birch, and Little Caney valleys yielded evidence for late summer through winter occupations.

SITE 34OS102

Site 34OS102 is located on one of a series of low sandstone ridgetoes that extend onto the Hominy Creek floodplain (Figure 1). The site is situated on the south side of the creek some 400m from its present channel. Separating the site from the creek are several large erosional channels as well as a small cutoff channel which now contains water forming a slough.

Site 34OS102 was found in 1972 after the surface had been cleared by a bulldozer. Many broken sandstone fragments litter the surface, and much of the original soil surface appears to have eroded. Prior to 1966 the site was greatly disturbed when a stock tank and road were constructed. More than 50% of the site was likely lost. The remaining portions of the site are situated on a strip of east-west land separating the road from the stock pond (Figure 5). Other portions of the site were thought to be present north of the road on the very front of the ridgetoe. In these two areas, test excavations were located.

Description of Excavation

A series of 5 (1m and 0.5m x 1m) units was set on the strip of land north of the road with 2 (1m x 0.5m) units placed south of the road. Two other units (1m x 0.5m) were set out east of the stock pond and labeled east annex. All units were excavated in 50cm square quads in 10cm arbitrary levels. All excavated matrix was waterscreened onto 1mm window screen and picked. Most units were excavated to a depth of 30cm.

The culture-bearing sediments of the site were shallow. No cultural materials were located in a dark red-orange clay found, across the site, at an approximate depth below surface of 25cm. Above this clay and extending to the surface a gray-tan fine-grained sandy silt complete the profile. Angular sandstone pieces were found throughout the units.

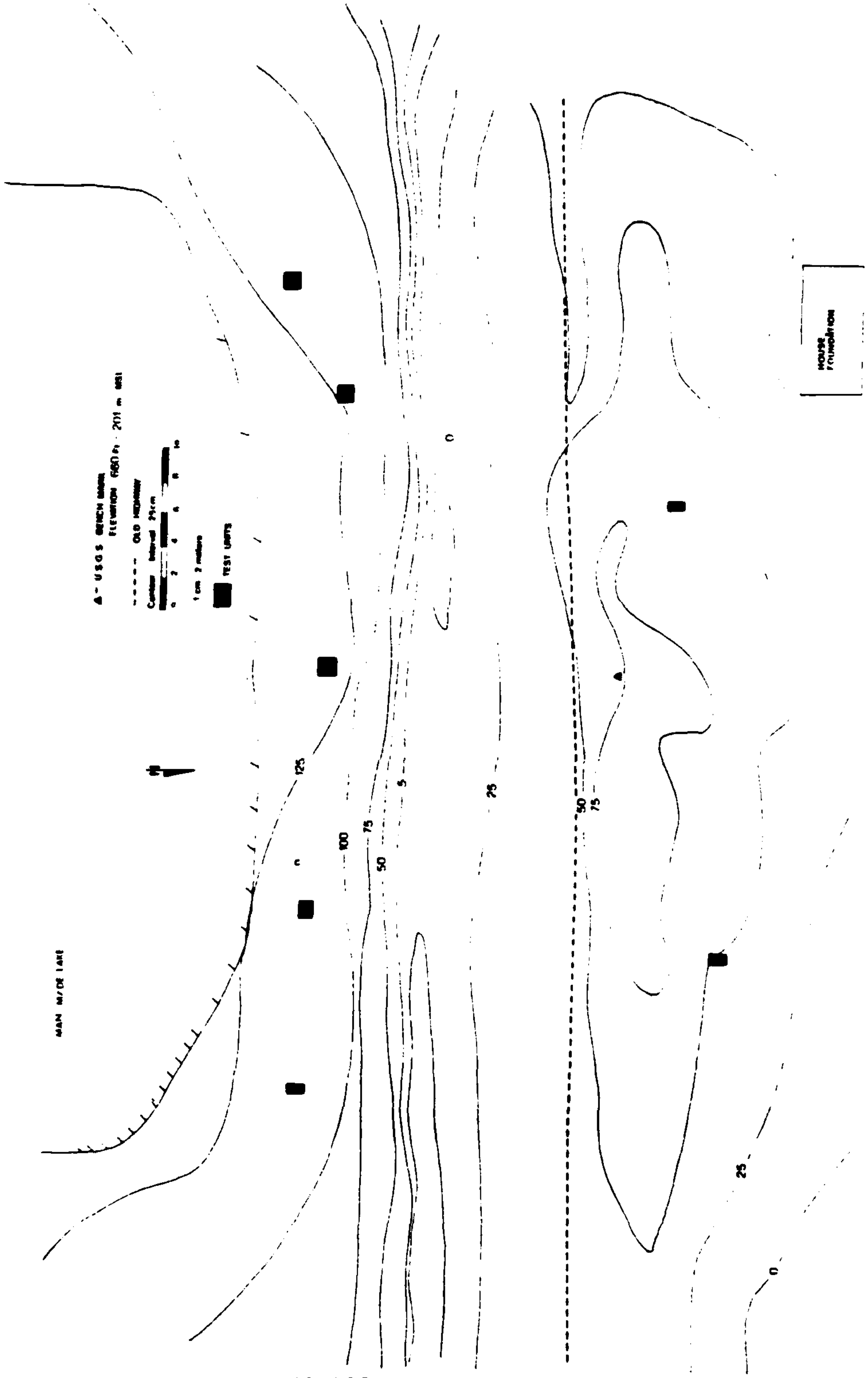


Figure 5. Site Map of 340S102

Occasional pieces of fire-broken rock and flecks of charcoal were recorded. Unfortunately not enough carbonized material was present for a date.

Site 34OS102 has a similar geomorphic setting as do the downstream sites of 34OS101 and 34OS105 and the upstream site of 34OS111, in that all these sites are positioned above the major floodplain on older surfaces underlain by a red clay. Soil maps place all three of these sites within the Niotaze-Darnell soil complex (Bourlier, et al, 1979).

Material Culture

The artifactual inventory recovered from 34OS102 was restricted to chipped stone elements. Of the 314 specimens retrieved from the test excavations, only 3 were tool forms and none of these were temporally diagnostic.

The tools include an end-scraper or a large thick flake and 2 marginally retouched flakes.

The non-tool assemblage, dominated by tertiary and bifacial thinning elements, suggests an emphasis on final lithic processing activities which were probably related to the maintenance and rejuvenation of tools (Table 7). The vertical distribution of chipped stone elements as reflected in non-tool densities reveals a shallow cultural deposit confined to the upper 30cm.

Raw Material Utilization

An examination of the raw material varieties that were employed in the fabrication of chipped stone artifacts indicates that Florence and Keokuk cherts were the preferred varieties (Table 8). No significant vertical variation exists in the patterns of chert usage at the site as evidenced by the similar configurations of levels 0-10cm and 10-20cm.

TABLE 7

Non-tool Element Densities, Counts, and Frequencies from 340S102. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.S.	Non-tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunck		Total
		N	%	N	%	N	%	N	%	N	%	
Surface		0	-	0	-	6	100.0	0	-	0	-	6
0-10	20.0	0	-	1	0.9	104	94.5	5	4.5	0	-	110
10-20	34.2	0	-	1	0.5	182	96.8	4	2.1	1	0.5	188
20-30	4.0	0	-	0	-	7	100.0	0	-	0	-	7
Total		0	-	2	0.6	299	96.1	9	2.9	1	0.3	311

TABLE 8

Raw Material Varieties from 34OS102.

	N	Florence %	Foraker %	Keokuk %	Tahlequah %	Neva %	Heat-treated %
Surface							
Tools	2	100.0	-	-	-	-	100.0
Non-tools	6	33.3	-	66.7	-	-	66.7
0-10 B.S.							
Tools	1	100.0	-	-	-	-	100.0
Non-tools	110	50.0	0.9	49.1	-	-	69.1
10-20 B.S.							
Tools	1	100.0	-	-	-	-	-
Non-tools	188	52.7	0.5	46.8	-	-	61.2
20-30 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	7	100.0	-	-	-	-	57.1
Total							
Tools	4	100.0	-	-	-	-	75.0
Non-tools	311	52.4	0.6	46.9	-	-	64.0

Summary and Conclusions

Site 340S102 failed to furnish temporally diagnostic artifacts or materials suitable for obtaining radiometric dates. Although the geomorphic position of the site would suggest an Archaic or perhaps early Woodland age occupation, the recovered evidence does not provide an independent confirmation of this proposal.

SITE 340S103

Site 340S103 is an open terrace site found on the eastern side of Turkey Creek 300 meters south of its confluence with Hominy Creek (Figure 1). Forming the eastern boundary of the site is a dry stream channel with the beginnings of sandstone upland abutting this channel (Figure 6). The site has been heavily plowed for a number of years. Considerable chert debitage, several tools plus pieces of fire-cracked rock and groundstone were visible on the surface. These materials were eroding downslope to the west towards Turkey Creek.

Description of the Excavation

A large collection grid (30m x 10m) was laid out to sample the surface distribution of cultural materials. Unfortunately, before the collection of the grid was completed the field was cultivated. Formal excavations consisted of four (1.0m x 0.5m) test units; three of which were placed in the undisturbed margin of the field on the eastern side of the site. Excavations were conducted in 10cm arbitrary levels with the units' matrix waterscreened. Sixty centimeters below surface was the average depth obtained in each of the excavation units. The sediments were a fine sandy loam with the amount of the clay fraction increasing with depth. The upper 25cm of the site exhibits a well-defined plowzone. The site soil is classified as being part of the Barnsdall Series, a flood plain soil (Bourlier, et al, 1979).

Material Culture

The artifactual inventory recovered from the surface collection and test excavation of 340S103 were restricted to chipped and groundstone specimens.

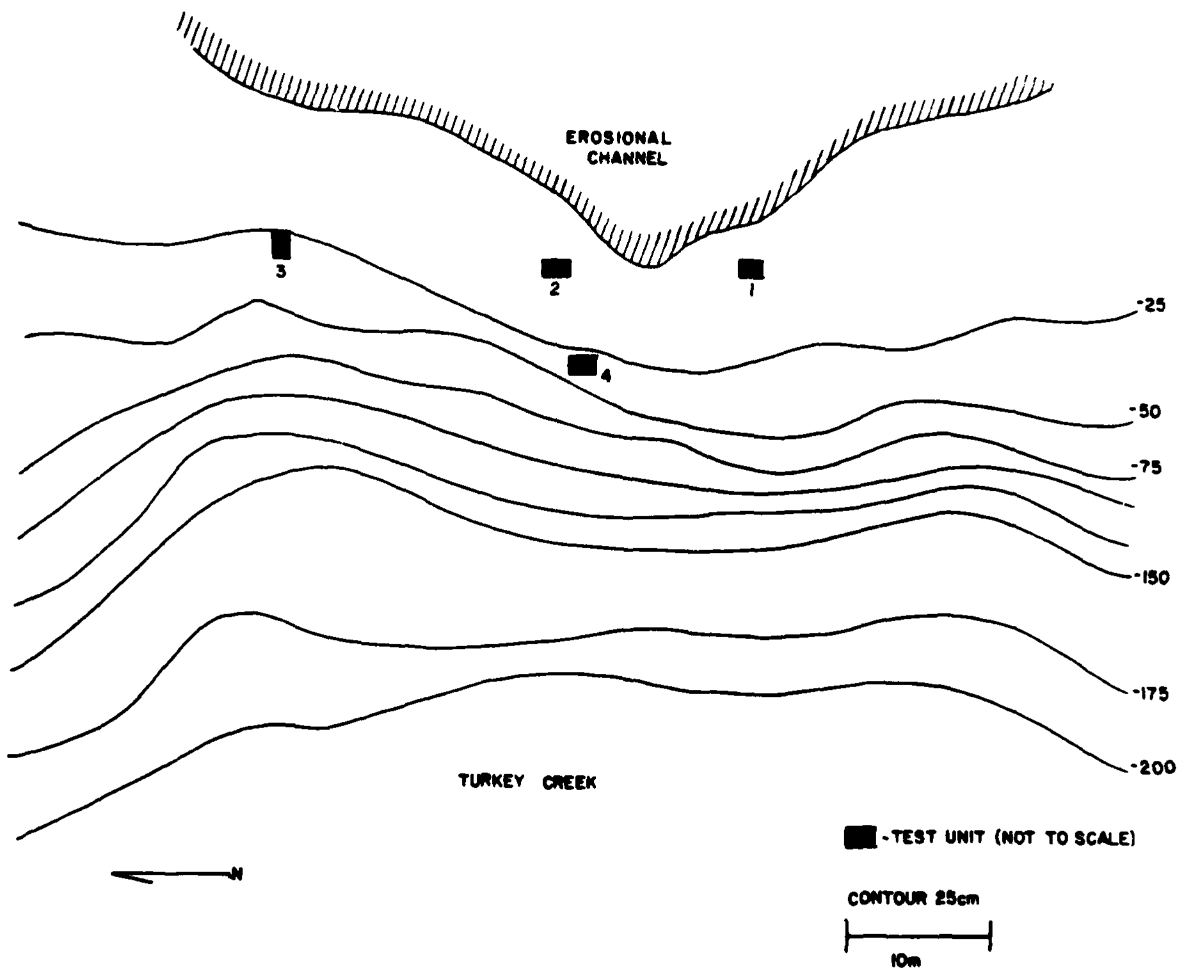


FIGURE 6: Site Map of 34OS103

Of the 174 chipped stone elements, only 10 were tools and only 2 of these were recovered from the test excavations. The small number of specimens clearly limits the tool analysis to little more than description, particularly given the absence of temporally diagnostic specimens.

The tool assemblage is composed of a triangular end-scraper with lateral retouch, a simple perforator as a flake, a multiple-notched blade, two marginally retouched flakes, three medical sections of points, and two bases of medium sized corner-notched points.

The non-tool elements are principally composed of tertiary elements with lesser numbers of bifacial thinning, secondary, and primary elements (Table 9). The predominance of tertiary elements in conjunction with the relatively high frequencies of bifacial thinning elements defines an emphasis on the final stages of lithic processing.

An examination of the artifact density of the site by level indicates that buried occupation surface appears between 20-30cm below surface. Unfortunately, this surface rests within the plowzone.

Raw Material Utilization

The chipped stone artifacts recovered from the site were primarily fabricated from Keokuk cherts although Florence and Foraker cherts were used to some extent (Table 10).

Summary and Conclusions

Although the geomorphic setting of Site 34OS103, within a terrace overlying the Skiatook Paleosol, suggests a late Archaic or more likely Woodland age for the occupation, independent chronologic evidence was not recovered from site. The presence of corner-notched point bases would support a Plains Woodland Period horizon at the site, but the sample size is inadequate for an unqualified temporal placement.

TABLE 9

Non-tool Element Densities, Counts, and Frequencies from 340S103. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.S.	Non-Tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
Surface		1	0.8	1	0.8	114	92.7	6	4.9	1	0.8	123
0-10		0	-	1	9.1	9	81.8	1	9.1	0	-	11
10-20		0	-	0	-	2	66.7	1	33.3	0	-	3
20-30		0	-	0	-	12	85.7	1	7.1	1	7.1	14
30-40		0	-	0	-	6	85.7	1	14.3	0	-	7
40-50		0	-	0	-	0	-	0	-	0	-	0
50-60		0	-	0	-	5	83.3	1	16.7	0	-	6
Total		1	0.6	2	1.2	148	90.2	11	6.7	2	1.2	164

TABLE 10

Raw Material Varieties from 34OS103.

	N	Florence %	Foraker %	Keokuk %	Tahlequah %	Neva %	Heat-treated %
Surface							
Tools	7	28.6	-	71.4	-	-	42.9
Non-tools	123	8.1	0.8	91.1	-	-	25.2
0-10 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	11	-	-	100.0	-	-	0.0
10-20 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	3	-	-	100.0	-	-	0.0
20-30 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	14	7.1	-	92.9	-	-	7.1
30-40 B.S.							
Tools	1	100.0	-	-	-	-	100.0
Non-tools	7	-	-	100.0	-	-	0.0
40-50 B.S.							
Tools	1	-	-	100.0	-	-	-
Non-tools	0	-	-	-	-	-	-
50-60 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	6	-	-	100.0	-	-	-
Total							
Tools	9	33.3	-	66.7	-	-	44.4
Non-tools	164	6.7	0.6	92.7	-	-	20.0

SITE 34OS111

Site 34OS111 is an open terrace site located on the western side of Hominy Creek approximately 1 km upstream from its junction with Cedar Creek (Figure 1). The site rests on a terrace remnant which is backed on the west by the steep slopes that make the western wall of Hominy Creek Valley. The terrace is separated from the creek by the broad (300m wide) floodplain currently used as a pasture. A deep erosional gully, running east-west, forms the southern edge of the site. The site is approximately 1000m^2 in area.

Description of the Excavation

An examination of pasture and the gully revealed no cultural remains while a collection of the rodent mounds and exposures on the terrace yielded a stemmed dart point and two chert flakes. Seven test units (1m x 0.5m) spaced across the terrace, failed to reveal any cultural material.

As with sites 34OS102 and 34OS101 the sediments of site 34OS111 are a fine-grained silt-loam which are underlain by the distinctive and widespread red clay of the Skiatook Paleosol. The terrace is comprised of sediments forming the Niotaze-Darnell soil complex (Bourlier, et al, 1979).

Summary and Conclusions

The paucity of artifacts on the surface and absence of sub-surface cultural material suggests that the area of 34OS111 was, at most, briefly utilized by the prehistoric inhabitants of the valley. The lack of artifactual evidence, however, precludes designating the site to a specific cultural-historic interval.

SITES 34OS112 and 34OS113

Both 34OS112 and 34OS113 are reported as being small open sites situated around a meander loop on the north bank of Wildhorse Creek approximately

0.5km west of its junction with Hominy Creek (Figure 1). The area has been intensively cultivated for a number of years. Groundstone artifacts have been collected from the surface of 34OS112 with additional chipped stone and groundstone materials found at 34OS113. A careful surface inspection of these recorded site localities yielded no cultural remains. These sites, therefore, could not be further documented. In all likelihood the whole of this terrace had been sporadically occupied, in various locations, over a number of years. Continued cultivation coupled with the original paucity of cultural remains has made the demarcation and relocation of these sites difficult from year to year.

SITE 34OS115

Site 34OS115, an open site, is located on the west side of Wildhorse Creek 400m downstream from the Highway 20-Wildhorse Creek bridge (Figure 1). Wildhorse Creek is a major tributary of Hominy Crek and enters the major watercourse some 1.5km east of the site. The site rests on a high terrace 4-6m above the present bed of Wildhorse Creek. A sizeable erosional gully skirts the western and northern perimeter or the site with the high scarp bank of Wildhorse Creek demarking the eastern edge. Further to the west beyond the gully higher sandstone uplands and bluffs are found.

Small quantities of fire-broken rock fragments, pieces of groundstone, and chert flakes were scattered over the cultivated surface of the site. An intensive surface survey identified several areas where there appeared to be concentrations of prehistoric cultural materials. It was in these areas that the test units were placed (Figure 7). Five units (1 x 0.5m) were excavated in 10cm arbitrary levels with materials transported to the creek for waterscreening. Three units (1,2,5) were placed within the plowed field while the others were set in unplowed areas. Only 8 flakes were recovered from the test units.

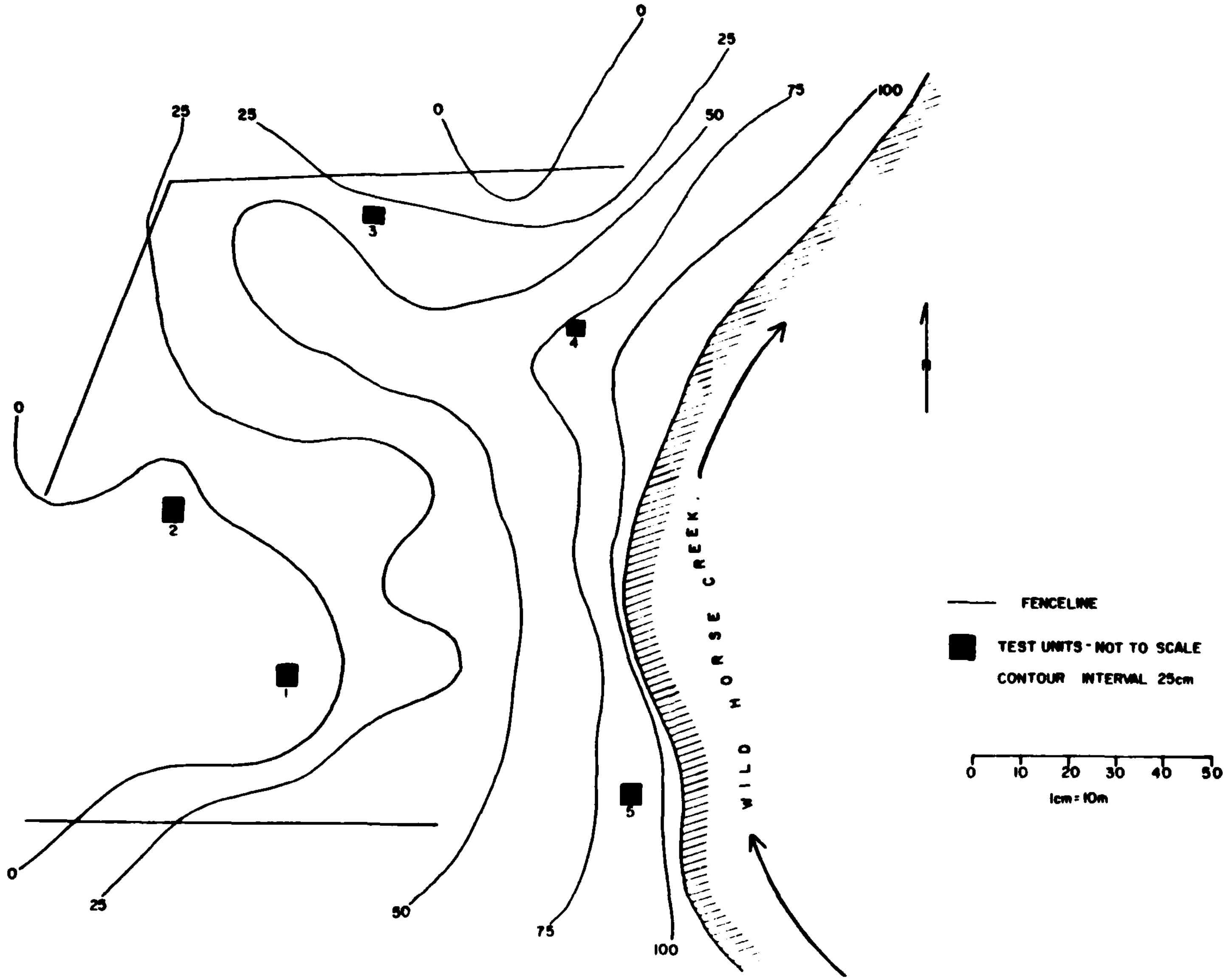


FIGURE 7: Site Map of 34OS115

The units were generally excavated to a depth of 30cm. The sediment matrix was light tan with very fine sandy loam of the Barnsdall soil series with an increasing clay fraction found in the bottom of units 1 and 2 near the ero-siaional gully. Close inspection of the bank exposure revealed neither cultural materials nor buried surfaces.

The scant and scattered nature of the cultural debris attests to the numerous cultivations, previous collection, and ephemeral nature of the occupation(s) of the site.

SITE 34OS116

The site was reported in 1972 by G. Perino and is located 200m south of the Highway 20 Wildhorse Creek bridge on the west side of the Creek (Figure 1). The creek takes a large turn at this point and has cut into the terrace exposing a 4m to 6m vertical face. Site 24OS116 is found on this terrace (same terrace as Site 34OS115) in the creek bend. The site is confined on the north and south by steep sided gullies and on the east by the creek.

An intensive search of the bank exposure and the plowed field yielded very few prehistoric cultural remains. Several pieces of fire-broken rock and some groundstone fragments comprised the total prehistoric surface collection. Several pieces of recent historic glass and crockery were noted during the surface search. A number of historic oilfield-related concrete pads are to be found immediately south of the site.

Seven units, whose combined surface area was 3.25 sq m, were placed in the northeastern quarter of the site, near the area where the prehistoric debris was noted, and excavated in 10cm levels to a depth of 30cm. All matrix was transported to the creek for waterscreening. Additionally, a number of shovel tests (.05m x .05m) were spaced across the site. The test units nor the shovel

tests yielded prehistoric remains. The site lies within the Verdigris soil series, with the sediments being a silty-loam.

Based on the present and past surface collections, excavated units, and shovel tests, the occupation of this site appears to have been of very transitory nature.

SITE 34OS120

Materials from this open site are scattered along the southwestern edge of an NW/SE trending oxbow cutoff of Hominy Creek (Figure 1). The site sits on a terrace across Hominy Creek to the southeast of two previously excavated shelter sites: Big Hawk Shelter (34OS114) and Cut Finger Cave (34OS138) and a kilometer downstream from the confluence of Boar Creek and Hominy Creek. Open pasture dotted with stands of scrub oak dominates the landscape. Sandstone bedrock surfaces in many localities around the oxbow.

Seven formal excavation units (6- 1m x 0.5m, 1- 1m x 1m) were set out along and back from the edge of the oxbow (Figure 8). These units were dug in 50cm square quads in 10cm arbitrary levels. All materials were fine water-screened. Filling in areas between the test units were a series of shovel tests. Shovel tests and one test unit (1.0m x 0.5m) were also utilized in investigating some higher areas in the pasture southeast of the oxbow. None of the shovel tests yielded cultural materials.

The site sediments were the characteristic valley alluvium, a light-tan sandy loam. Broken sandstone fragments of varying sizes were found in all test units. The soils of the site are classified as falling into the Darnell-Stephenville Complex with a wedge of Cleora find sandy loam located in the southeast portions of the site.

Material Cultu

The artifacts recovered from 34OS120 were restricted to chipped stone

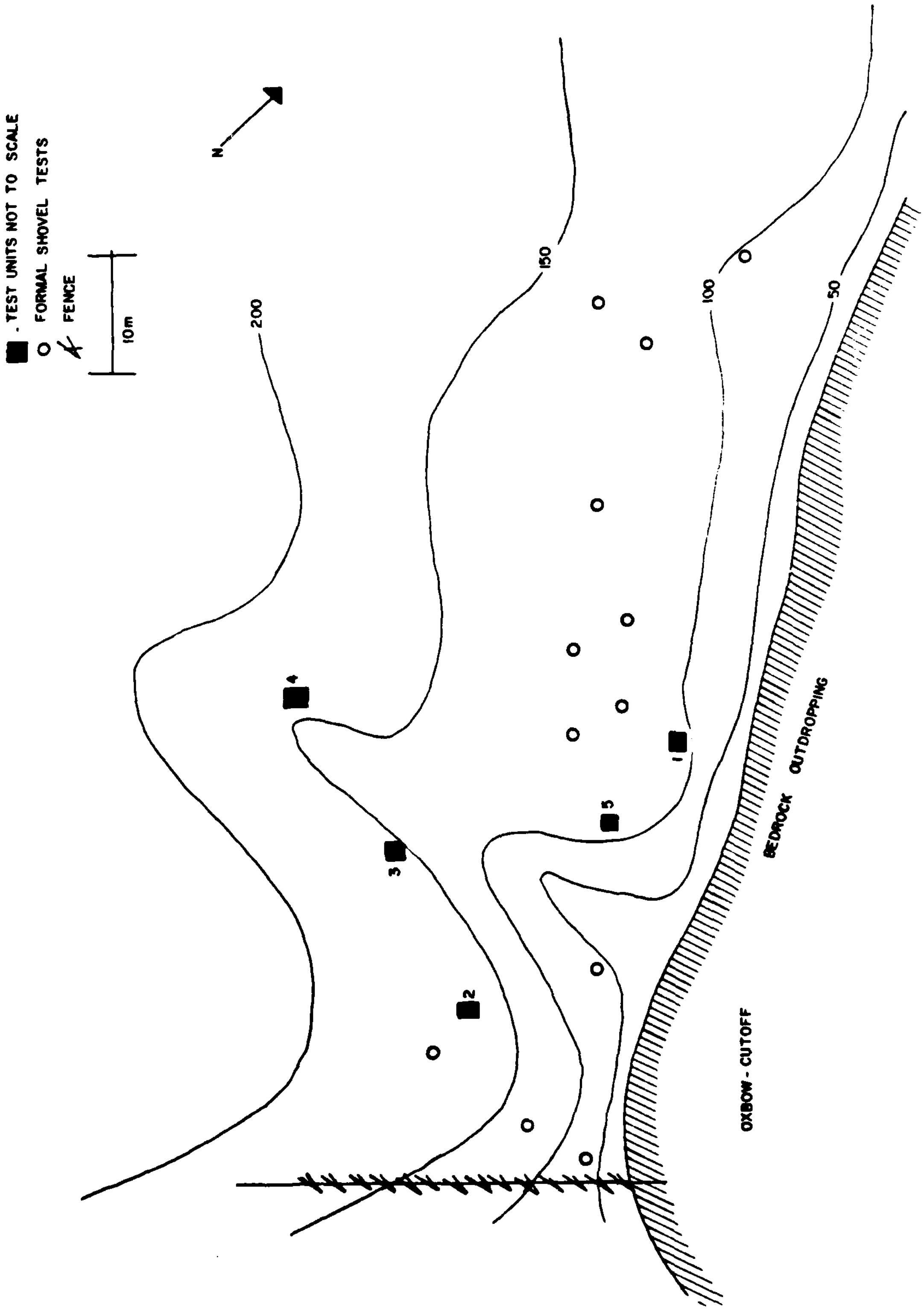


Figure 8. Site Map of 34OS120

elements. In conjunction with 87 non-tool elements a single non-diagnostic retouched flake was recorded (Table 11). Although the site exhibited low non-tool densities, non-tool elements did appear to increase in frequency to around 50cm in depth. The test excavations also revealed two concentrations with units 2 and 5 yielding the majority of artifacts (Table 12).

While the chipped stone assemblage was dominated by tertiary elements, primary and secondary elements were recorded in significantly higher proportions than at most other sites in the valley. The occurrence of the primary and secondary elements suggests that some initial processing was undertaken at the site.

Raw Material Utilization

Florence and Keokuk cherts were the predominant varieties used in fabricating chipped stone tools at the site (Table 13). Regardless of stratigraphic level, Keokuk chert was utilized to a greater extent.

Summary and Conclusions

Confronted with an absence of diagnostic artifacts and radiometric determinations, it is not possible to assign the occupation of 34OS120 to a specific cultural-historic period. The geologic position of the site in the first terrace of Hominy Creek suggests a Late Prehistoric age.

THE NEW BRIDGE SITE (34OS141)

The New Bridge site is located on a terrace, approximately 6m above the present stream channel, southwest of Hominy Creek (Figure 1). The site was exposed when bisected by a north-south running county road which cuts through the terrace to a low water bridge. Immediate work on this site was required due to the construction of a new bridge and highway which, since testing, has

TABLE 11

Non-tool Element Densities, Counts, and Frequencies from 340S120. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.S.	Non-tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
Surface/ Erosion		1	50.0	0	-	1	50.0	0	-	0	-	2
0-10	3.4	0	-	1	8.3	11	91.7	0	-	0	-	12
10-20	6.7	0	-	1	5.0	18	90.0	1	5.0	0	-	20
20-30	7.2	1	5.6	0	-	17	94.4	0	-	0	-	18
30-40	12.0	0	-	1	4.2	23	95.8	0	-	0	-	24
40-50	13.8	0	-	2	18.2	9	81.8	0	-	0	-	11
Total		2	2.3	5	5.7	79	90.8	1	1.1	0	-	87

TABLE 12

Non-tool Element Counts, and Frequencies from 340S120 by Unit by Level.

Test Pit Level	1		2		3		4		5		6		Total
	N	%	N	%	N	%	N	%	N	%	N	%	
(0-10 B.S.)													
Primary	0	-	0	-	0	-	0	-	0	-	0	-	0
Secondary	0	-	1	100.0	0	-	0	-	0	-	0	-	1
Tertiary	0	-	9	81.8	0	-	0	-	2	18.2	0	-	11
Bifacial Thinning	0	-	0	-	0	-	0	-	0	-	0	-	0
(10-20 B.S.)													
Primary	0	-	0	-	unexcavated		0	-	0	-	0	-	0
Secondary	0	-	1	100.0			0	-	0	-	0	-	1
Tertiary	3	16.7	12	66.7			0	-	3	16.7	0	-	18
Bifacial Thinning	0	-	0	-			0	-	1	100.0	0	-	1
(20-30 B.S.)													
Primary	1	100.0	0	-			unexcavated		0	-	0	-	1
Secondary	0	-	0	-					0	-	0	-	0
Tertiary	0	-	1	5.9					14	82.3	2	11.8	17
Bifacial Thinning	0	-	0	-					0	-	0	-	0
(30-40 B.S.)													
Primary	0	-	0	-					0	-	0	-	0
Secondary	0	-	1	100.0					0	-	0	-	1
Tertiary	1	4.3	3	13.0					18	78.3	1	4.3	23
Bifacial Thinning	0	-	0	-					0	-	0	-	0
(40-50 B.S.)													
Primary	0	-	0	-					0	-	unexcavated		0
Secondary	0	-	0	-					2	100.0			2
Tertiary	0	-	0	-					9	100.0			9
Bifacial Thinning	0	-	0	-					0	-			0
Total	5	5.9	28	32.9	0	-	0	-	49	57.6	3	3.5	85

TABLE 13

Raw Material Varieties from 34OS120.

	N	Florence %	Foraker %	Keokuk %	Tahlequah %	Neva %	Heat-treated %
Surface/ Erosion							
Tools	1	-	-	100.0	-	-	-
Non-tools	2	-	-	100.0	-	-	-
0-10 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	12	33.3	-	66.7	-	-	66.7
10-20 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	20	40.0	-	60.0	-	-	65.0
20-30 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	18	22.2	5.6	72.2	-	-	44.4
30-40 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	24	33.3	-	66.7	-	-	62.5
40-50 B.S.							
Tools	0	-	-	-	-	-	-
Non-tools	11	18.2	-	81.8	-	-	63.6
Total							
Tools	1	-	-	100.0	-	-	0.0
Non-tools	87	29.9	1.1	69.0	-	-	58.6

completely destroyed the site. Prior to testing, portions of the site east of the road had been destroyed leaving an area estimated at 2500 sq.m.

Description of the Excavation

The nine test units (3- 1m x 1m and 6- 0.5m x 1m) which were placed in this area were positioned on the basis of surface artifact density and the absence of disturbance (Figure 9). Surface artifacts consisted of fire-broken rock, chert flakes and several tools. Units were excavated in 10cm arbitrary levels and recovered matrix was waterscreened through 1mm mesh. Units were excavated to depths of 50cm. The sediments were fine-grained, light brown sandy-loam. The only changes noted in the profiles were in the degree of compactness of the sediments. The upper 15-20cm of matrix was loose and likely represents the recent plow zone. The next 30cm were compact and hard with the following 10cm returning to a loose matrix. The sediments are considered to be representative of the Cleora soil series.

Woven or "braided" clay lenses were recorded in several pit profiles. The lenses were on 5-10 cm. in amplitude, and 1-2 cm thick. The lenses separated lithologically homogeneous sandy-loam deposits. Such lenses are commonly associated with the fine sorting that accompanies declining rates of flow and receding waters which follow floods (Fairbridge, 1968:360-362). Such clay lenses are common alluvial characteristics and can be found today following floods of Hominy Creek. Alternative processes which could produce grossly similar phenomena would include: (a) aeolian derived clay ripples, (b) clay veneers produced by low velocity sheet wash, and (c) post-depositional mobilization of clays. Given the absence of paleo-surface definition (not too mention other lines of evidence), neither aeolian activity nor sheet erosion can reasonably explain the phenomenon. In that post-depositional mobilization of clay associated with pedogenesis would produce a diffuse clay bulge, not discrete lenses,

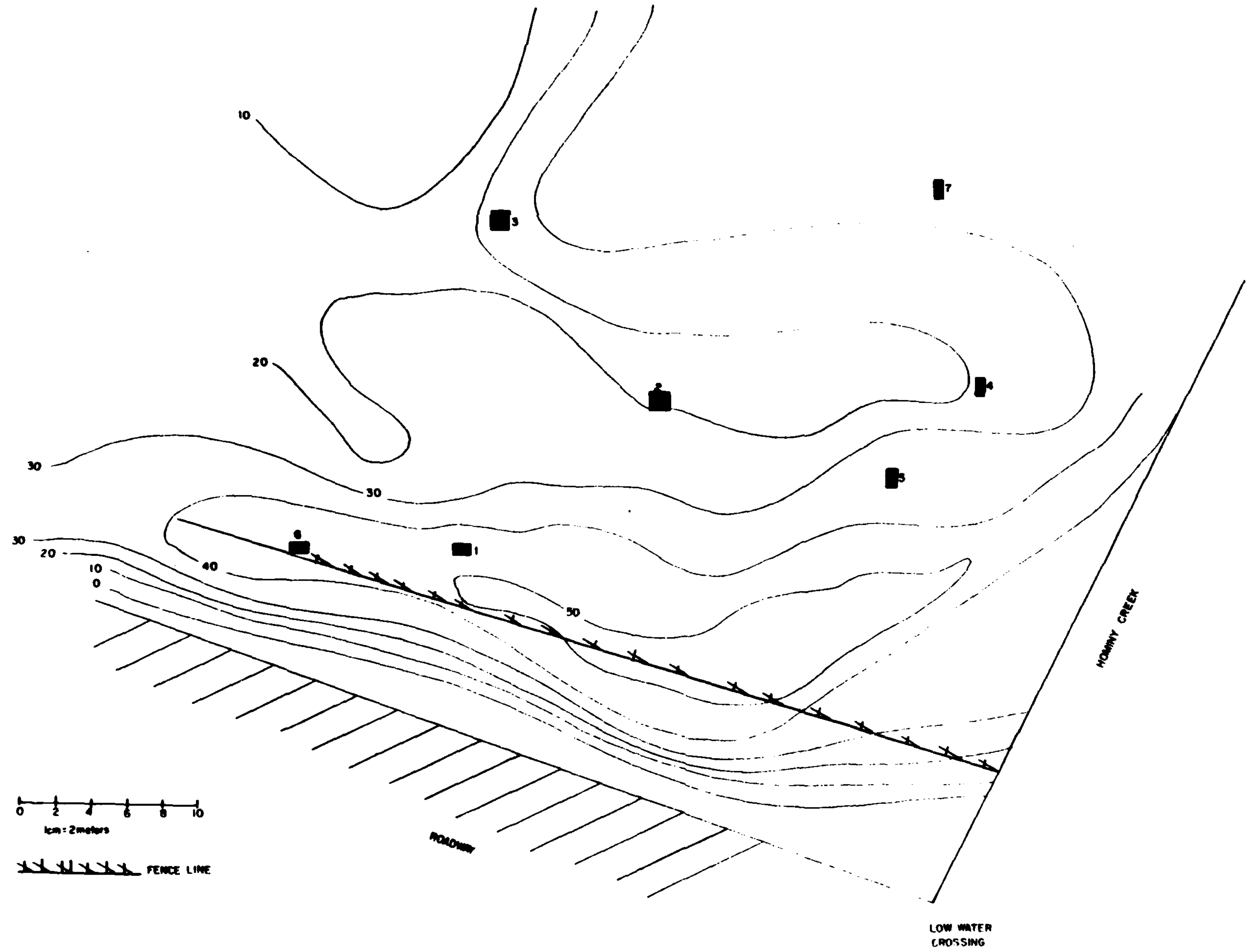


FIGURE 9: Site Map of the New Bridge Site (34OS141)

this process also fails to fit the field evidence. It seems likely therefore that the clay lenses represent past periods of high water, as they do today in a similar physiagraphic context along Hominy Creek.

A second area on the same terrace 150m to the west was recognized while doing a surface survey of the new road right-of-way near the beginning of an upland rise. Several pieces of chert and fire-cracked rock were visible on the surface. This locality (34OS141A) has the same geomophic setting as the major area of Site 34OS141.

Two test units were placed in this area using the same recovery strategy as previously presented. The sediments were also a sandy-loam of the Cleora soil series.

Like a number of the terrace sites in the Hominy Creek valley scattered occupations likely occurred along the whole of the 34OS141 terrace with the major concentrations of materials found near the bridge.

Material Culture

The excavations of the two areas of the New Bridge Site produced 7 chipped stone tools and 288 non-tool elements in addition to a few ground stone specimens (Table 14).

While only 7 chipped stone tools were retrieved from the excavation, 3 of these were in the form of Fresno points. These points are diagnostic of the Plains Village Period and have been found within a number of dated contexts (i.e. 800-1,500 A.D.) within the valley (Henry, 1978a). Two of the retouched elements exhibit very steep bilateral obverse retouch, while the third specimen displays shallow inverse retouch. The multiple notch is formed on a small flake with three contiguous concavities appearing on one edge.

The 288 non-tool elements were principally in the form of primary and secondary elements occurring (Table 14). The high frequencies of tertiary and

TABLE 14

Non-tool Element Densities, Counts, and Frequencies from 340S141. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

	Non-tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
Surface		0	-	0	-	10	100.0	0	-	0	-	10
Test Pit 1												
0-10 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
10-20 B.S.	10.0	0	-	2	40.0	3	60.0	0	-	0	-	5
20-30 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
30-40 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
40-50 B.S.	2.0	0	-	0	-	1	100.0	0	-	0	-	1
Total		0	-	2	16.7	10	83.3	0	-	0	-	12
Test Pit 2												
0-10 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
10-20 B.S.	8.0	0	-	0	-	4	100.0	0	-	0	-	4
20-30 B.S.	8.0	0	-	0	-	3	75.0	1	25.0	0	-	4
30-40 B.S.	2.0	0	-	0	-	1	100.0	0	-	0	-	1
Total		0	-	0	-	8	88.9	1	11.1	0	-	9
Test Pit 3												
0-10 B.S.	4.0	0	-	0	-	4	100.0	0	-	0	-	4
10-20 B.S.	12.0	0	-	0	-	12	100.0	0	-	0	-	12
20-30 B.S.	10.0	0	-	1	10.0	8	80.0	1	10.0	0	-	10
30-40 B.S.	10.0	0	-	0	-	8	80.0	2	20.0	0	-	10
Total		0	-	1	2.8	32	88.9	3	8.3	0	-	36
Test Pit 4												
0-10 B.S.	1.0	0	-	0	-	1	100.0	0	-	0	-	1
10-20 B.S.	15.0	0	-	0	-	14	93.3	1	6.7	0	-	15
20-30 B.S.	14.0	0	-	0	-	14	100.0	0	-	0	-	14
30-40 B.S.	3.0	0	-	0	-	3	100.0	0	-	0	-	3
40-50 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
Total		0	-	0	-	32	97.0	1	3.0	0	-	33
Test Pit 5												
0-10 B.S.	4.0	0	-	0	-	1	50.0	1	50.0	0	-	2
10-20 B.S.	66.0	0	-	0	-	32	97.0	1	3.0	0	-	33
20-30 B.S.	8.0	0	-	1	25.0	3	75.0	0	-	0	-	4
30-40 B.S.	20.0	0	-	0	-	9	90.0	1	10.0	0	-	10
40-50 B.S.	6.0	0	-	0	-	2	66.7	1	33.3	0	-	3
Total		0	-	1	1.9	47	90.4	4	7.7	0	-	52
Test Pit 6												
0-10 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
10-20 B.S.	2.0	0	-	0	-	1	100.0	0	-	0	-	1
20-30 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
30-40 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
40-50 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
Total		0	-	0	-	10	100.0	0	-	0	-	10

Test Pit 7												
0-10 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
10-20 B.S.	4.0	0	-	0	-	2	100.0	0	-	0	-	2
20-30 B.S.	4.0	0	-	0	-	2	100.0	0	-	0	-	2
30-40 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
40-50 B.S	10.0	0	-	0	-	5	100.0	0	-	0	-	5
Total		0	-	0	-	15	100.0	0	-	0	-	15
Test Pit 8												
0-10 B.S.	5.0	0	-	0	-	5	100.0	0	-	0	-	5
10-20 B.S.	19.0	0	-	0	-	18	94.7	1	5.3	0	-	19
20-30 B.S.	6.0	0	-	0	-	6	100.0	0	-	0	-	6
30-40 B.S.	7.0	0	-	0	-	6	85.7	1	14.3	0	-	7
40-50 B.S.	5.0	0	-	1	20.0	3	60.0	1	20.0	0	-	5
Total		0	-	1	2.4	38	90.5	3	7.1	0	-	42
Test Pit 9												
0-10 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
10-20 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
20-30 B.S.	2.0	0	-	0	-	1	100.0	0	-	0	-	1
30-40 B.S.	20.0	0	-	1	10.0	9	90.0	0	-	0	-	10
40-50 B.S.	10.0	0	-	0	-	5	100.0	0	-	0	-	5
50-60 B.S.	6.0	0	-	0	-	3	100.0	0	-	0	-	3
Total		0	-	1	5.3	18	94.8	0	-	0	-	19
Test Pit 10												
0-10 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
10-20 B.S.	1.0	0	-	0	-	1	100.0	0	-	0	-	1
20-30 B.S.	1.0	0	-	0	-	1	100.0	0	-	0	-	1
30-40 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
40-50 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
Total		0	-	0	-	2	10010	0	-	0	-	2

340S141A

Test Pit 1												
0-10 B.S.	1.0	0	-	0	-	1	100.0	0	-	0	-	1
10-20 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
20-30 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
30-40 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
40-50 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
Total		0	-	0	-	1	100.0	0	-	0	-	1
Test Pit 2												
0-10 B.S.	0.0	0	-	0	-	0	-	0	-	0	-	0
10-20 B.S.	5.0	0	-	0	-	5	100.0	0	-	0	-	5
20-30 B.S.	1.0	0	-	0	-	1	100.0	0	-	0	-	1
30-40 B.S.	1.0	0	-	0	-	1	100.0	0	-	0	-	1
40-50 B.S.	2.0	0	-	0	-	2	100.0	0	-	0	-	2
Total		0	-	0	-	9	100.0	0	-	0	-	9
Test Pit 3												
0-10 B.S.	34.0	0	-	0	-	17	100.0	0	-	0	-	17
10-20 B.S.	40.0	0	-	0	-	18	90.0	2	10.0	0	-	20
20-30 B.S.	2.0	0	-	0	-	1	100.0	0	-	0	-	1
Total		0	-	0	-	36	94.7	2	5.3	0	-	38

TABLE 15

Raw Material Varieties from 34OS141.

	N	Florence %	Foraker %	Keokuk %	Talaquah %	Neva %	Quartz %	Heat-treated %
Surface								
Tools	3	66.7	33.3	-	-	-	-	100.0
Non-tools	10	40.0	20.0	40.0	-	-	-	60.0
TEST PIT 1								
(0-10 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	66.7	-	33.3	-	-	-	66.7
(10-20 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	5	100.0	-	-	-	-	-	100.0
(20-30 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	33.3	-	66.7	-	-	-	33.3
(30-40 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
(40-50 B.S.)								
Tools	1	100.0	-	-	-	-	-	100.0
Non-tools	1	-	-	100.0	-	-	-	100.0
TEST PIT 2								
(0-10 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
(10-20 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	4	75.0	-	25.0	-	-	-	100.0
(20-30 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	4	25.0	-	75.0	-	-	-	50.0
(30-40 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	1	100.0	-	-	-	-	-	100.0
TEST PIT 3								
(0-10 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	4	50.0	-	50.0	-	-	-	75.0

(10-20 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	12	66.7	-	33.3	-	-	-	100.0
(20-30 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	10	50.0	-	50.0	-	-	-	80.0
(30-40 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	10	40.0	-	60.0	-	-	-	80.0
TEST PIT 4								
(0-10 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	1	-	-	100.0	-	-	-	100.0
(10-20 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	15	53.3	-	46.7	-	-	-	86.7
(20-30 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	14	42.9	-	57.1	-	-	-	100.0
(30-40 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	100.0	-	-	-	-	-	100.0
(40-50 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
TEST PIT 5								
(0-10 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	2	50.0	0 -	50.0	-	-	-	100.0
(10-20 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	33	60.6	-	39.4	-	-	-	78.8
(20-30 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	4	75.0	-	25.0	-	-	-	100.0
(30-40 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	10	90.0	-	10.0	-	-	-	100.0
(40-50 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	100.0	-	-	-	-	-	100.0

TEST PIT 6								
(0-10 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	33.3	-	33.3	-	-	33.3	66.7
(10-20 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	1	100.0	-	-	-	-	-	100.0
(20-30 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	66.7	-	33.3	-	-	-	100.0
(30-40 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	66.7	-	33.3	-	-	-	100.0
(40-50 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
TEST PIT 7								
(0-10 B.S.)								
Tool	1	100.0	-	-	-	-	-	100.0
Non-tool	3	33.3	-	66.7	-	-	-	100.0
(10-20 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tool	2	50.0	-	50.0	-	-	-	100.0
(20-30 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	2	100.0	-	-	-	-	-	100.0
(30-40 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	3	-	-	66.7	-	33.3	-	66.7
(40-50 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	5	-	20.0	80.0	-	-	-	20.0
TEST PIT 8								
(0-10 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	5	40.0	-	60.0	-	-	-	100.0
(10-20 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	19	57.9	-	42.1	-	-	-	94.7
(20-30 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	6	100.0	-	-	-	-	-	100.0
(30-40 B.S.)								
Tool	1	-	-	100.0	-	-	-	-
Non-tools	7	85.7	-	14.3	-	-	-	100.0

(40-50 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	5	20.0	-	80.0	-	-	-	100.0
TEST PIT 9								
(0-10 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
(10-20 B.S.)								
Tool	1	-	-	100.0	-	-	-	100.0
Non-tools	0	-	-	-	-	-	-	-
(20-30 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	1	-	-	100.0	-	-	-	100.0
(30-40 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	10	70.0	-	30.0	-	-	-	100.0
(40-50 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	5	40.0	-	60.0	-	-	-	40.0
(50-60 B.S.)								
Tools	0	-	-	-	-	-	-	-
Non-tools	3	33.3	-	66.7	-	-	-	100.0
TEST PIT 10								
(0-10 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
(10-20 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	1	-	-	100.0	-	-	-	-
(20-30 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	1	-	-	100.0	-	-	-	-
(30-40 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
(40-50 B.S.)								
Tool	0	-	-	-	-	-	-	-
Non-tools	0	-	-	-	-	-	-	-
Total								
Tool	7	57.1	14.3	28.6	-	-	-	85.7
Non-tool	240	56.3	1.3	41.6	-	0.4	0.4	85.4

bifacial thinning elements suggests an emphasis on the final stages of lithic reduction perhaps associated with tool maintenance and rejuvenation. The 11 test units evince a considerable stratigraphic variation in respect to non-tool densities. The vertical and horizontal variation in artifact densities of the site may be an expression of numerous small intermittent prehistoric encampments which were placed in various locations on the terrace over a long period of time.

Raw Material Utilization

Although some 5 varieties of raw material were used in the fabrication of chipped stone tools at the site, Florence and Keokuk cherts were the most frequently employed (Table 15). Considerable variation occurs in the vertical and horizontal distribution of the chert varieties with no clear pattern emerging. As a whole, however, Florence chert was used to a slightly greater extent than Keokuk chert.

Summary and Conclusions

The New Bridge Site represents a number of small ephemeral occupations during the Plains Village Period (i.e. 800-1500 A.D.). The recovery of 3 temporally diagnostic Fresno Points from the occupations, which rest within a Late Prehistoric age geomorphic setting, provide the basis for the chronologic designation.

The low densities of artifacts in conjunction with their sporadic vertical and horizontal distribution within and across the terrace suggests that the site represents numerous small intermittent occupations as opposed to settlement by large groups over a long period of time. The absence of midden material and evidence for structures (i.e. daub, post molds) provides further support for the ephemeral nature of the occupation episodes at the site.

THE WILLIAMS SITE (34OS160)

The Williams Site was located and tested by the University of Oklahoma in 1974 (Gettys, et al, 1976). The site is found on the major floodplain terrace on the northern side of Hominy Creek midway between the confluences of Cedar and Lost Creeks with Hominy Creek (Figure 1). The total site area is estimated to be 20,000m^2 with about 15% being uncultivated. Most of the uncultivated area is located in a wedge of land situated on the western extremity of the site between the base of ridgetoe on the north and Hominy Creek on the south.

Previous Studies

Previous studies by the University of Oklahoma consisted of five test units and a block excavation. Due to the deep cultural deposits and assignment to the Plains Woodland Period, further work was recommended to determine the duration, extent, and activities associated with the occupation(s) of the site. The recent phase of site assessment conducted in 1978 by the University of Tulsa expanded upon these goals (Henry, 1980). Fundamental thrusts of this phase included establishment of the area and depth of the site, correlation of site history with the alluvial history of the valley, and the recovery of datable materials from the site to confirm site chronology.

Numerous test units utilized in conjunction with controlled surface collections delimited the area of the site. A north-south backhoe trench revealed a stratigraphic profile greater than 3m in depth. Three stratigraphic layers were delineated in the trench. A lower yellow-to-red fine quartzite sand was capped by the red, Skiatook Paleosol and an upper unit of brown-to-grayish sandy silt containing the cultural materials. Charred materials were recovered from excavation and confirmed the Plains Woodland correlation with a date of approximately A.D. 500.

Based on the results of the 1978 testing phase, an additional investigation of the site was recommended. Potentials for locating in situ features (e.g. hearths, house floors, activity areas), collecting valuable paleoenvironmental evidence, and recovering a statistically significant artifact sample were considered obtainable site goals during the 1979 field season.

Description of the Excavation

The 1979 investigation began by clearing the 1974 University of Oklahoma block excavation and the establishing of 7 1m x 1m test units on an east-west axis from the block (Figure 10). The rationale guiding these initial steps was to determine the distribution of cultural materials for developing a larger block excavation. All recovered materials were waterscreened on 1mm mesh screen. The excavation technique utilized arbitrary 10cm excavation levels. As warranted, the shovel shaving of entire excavation floors rather than 50cm square quad control was utilized.

Based on recovered materials, three block units were eventually established. Block A was a 3m x 9m area which was shovel shaved as a unit in 10cm arbitrary intervals with all cultural debris greater than 10cm in diameter left in place. One feature (Feature 1) which will be discussed later was discerned. The relative lack of features in Block A led to the establishment of Block B to the south.

Block B measures 3m x 6m. This area also was excavated in 10cm arbitrary levels with the northwest quad of each 1m x 1m unit separately collected, screened, and bagged to aid in determination of artifact density. A concentration of burned sandstone (Feature 2; Figure 11) was encountered at a depth of 140cm below datum. This level was dug and recorded in standard 50cm square quads.

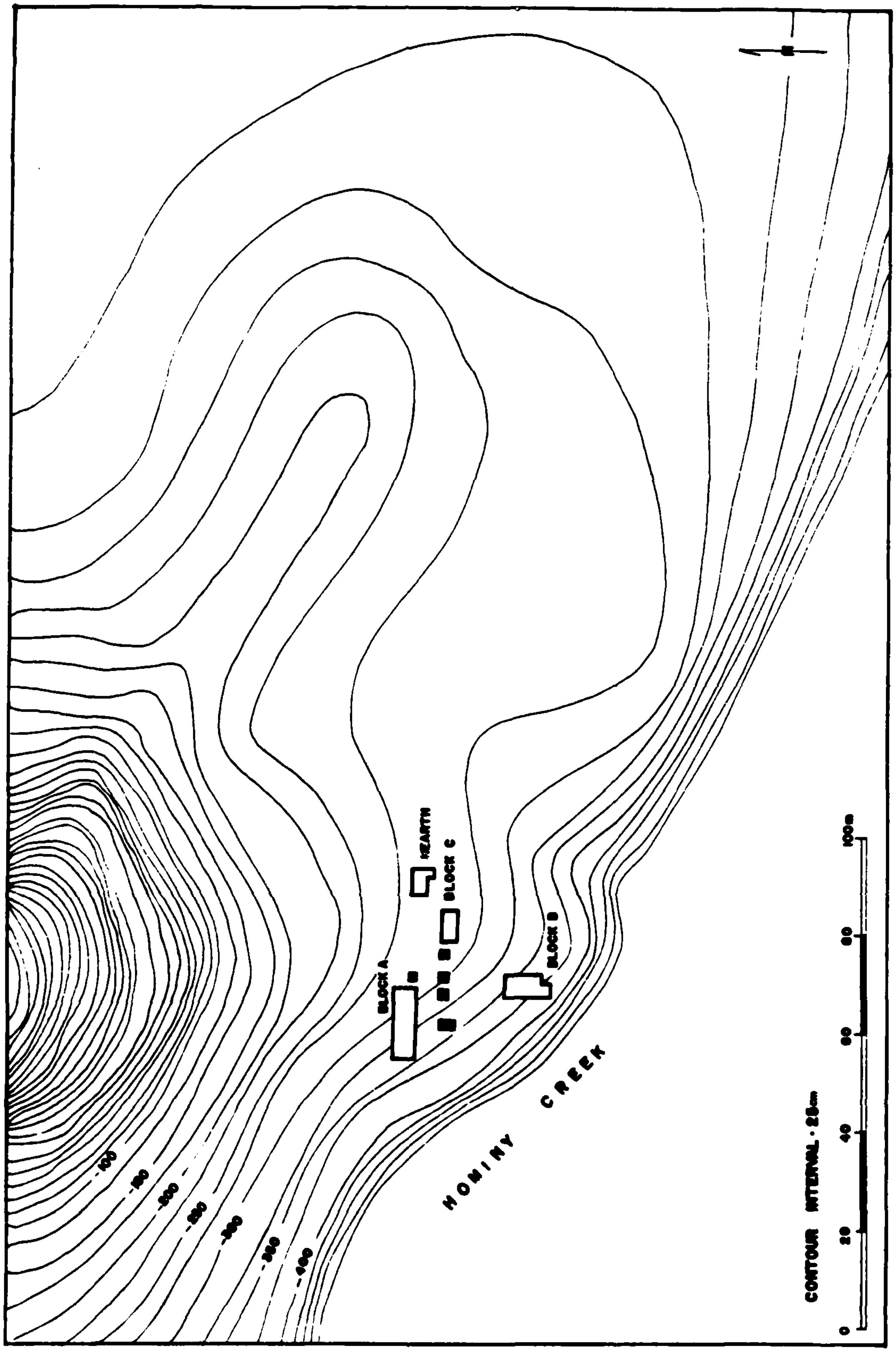


FIGURE 10: Site Map of the Williams Site (34OS160)

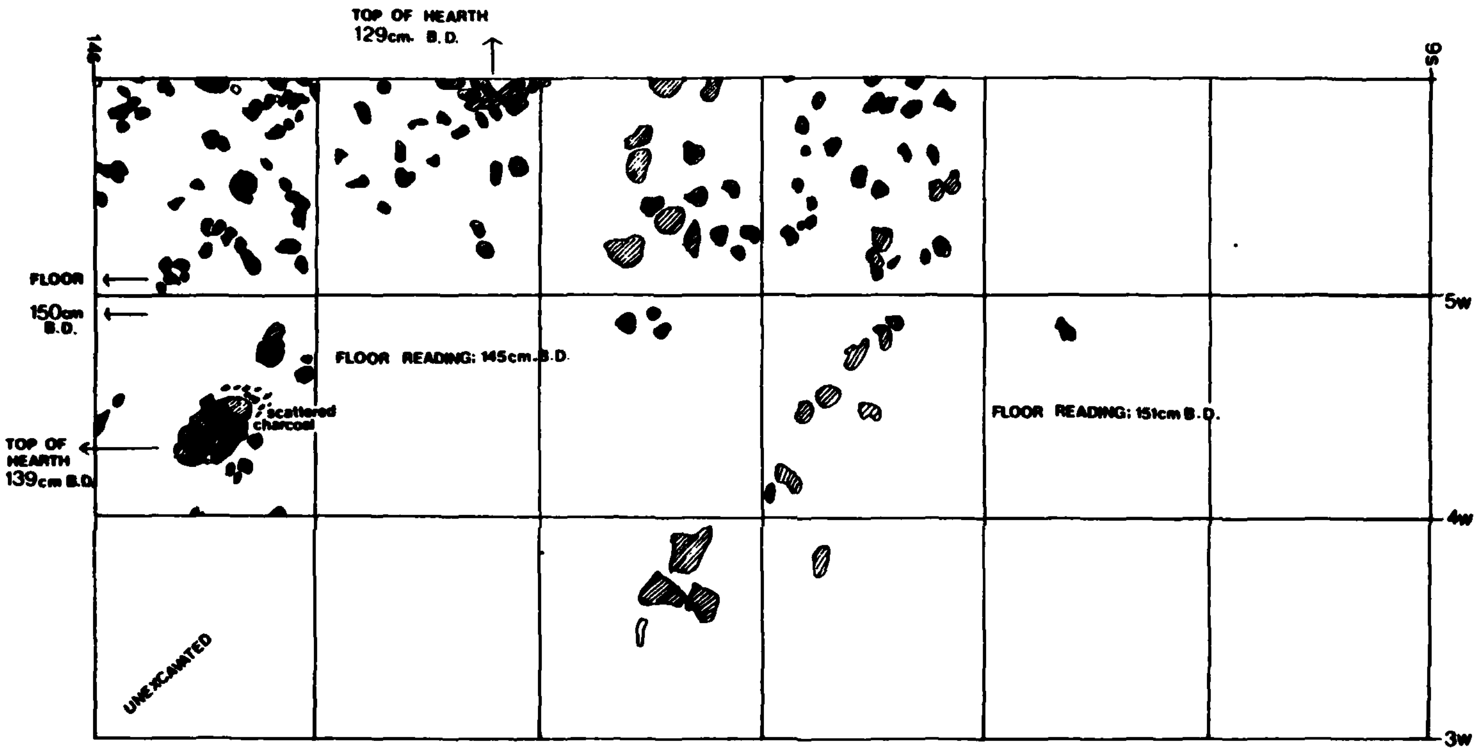


FIGURE 11: Map of Block B Showing Feature 2, from the Williams Site (34OS160)

While excavation of Blocks A and B were underway, close inspection of the block excavated in 1974 by the University of Oklahoma revealed a large concentration of burned sandstone (Feature 3) in the profile of the southeastern corner of this block. Two 1m x 1m units were placed to investigate this feature. It was soon evident, however, that the feature extended beyond these units; and the excavation was expanded to include a block of 7 sq m (Block C). The units were excavated in 50 sq cm square quads and 10cm levels.

Stratigraphy (Figures 12, 13)

The stratigraphic profiles of the west and north walls of Block B are representative of the stratigraphy found on a majority of the site. Four basic stratigraphic layers are distinguished on the basis of color, particle size and texture. The sediments are alluvial overbank deposits characterized by numerous thin clay bands as described for the New Bridge Site (See p. 51).

Stratigraphic layer A is a light greyish brown (10YR5/2) sand which is found overlying the whole of the site. In the field to the east this layer has been greatly disturbed, and often mixed with underlying sediment layers, by numerous deep plowings. Upslope to the north the layer pinches out or has been lost by erosion. Moving toward the creek layer A increases in thickness.

Stratigraphic layer B is a light greyish brown (10YR/2) sand with an appreciable silt fraction. Layer B is separated from Layer A by well defined clay lenses. Thin clay lenses are present throughout this layer. Layer B appears to pinch out near the southern end of Block B.

Stratigraphic layer C is only slightly different than layer B. The color is a pale brown (1YR6/3) and the silt fraction percentage in the sediment matrix is higher than layer B. Clay lenses are not well defined in this layer in the

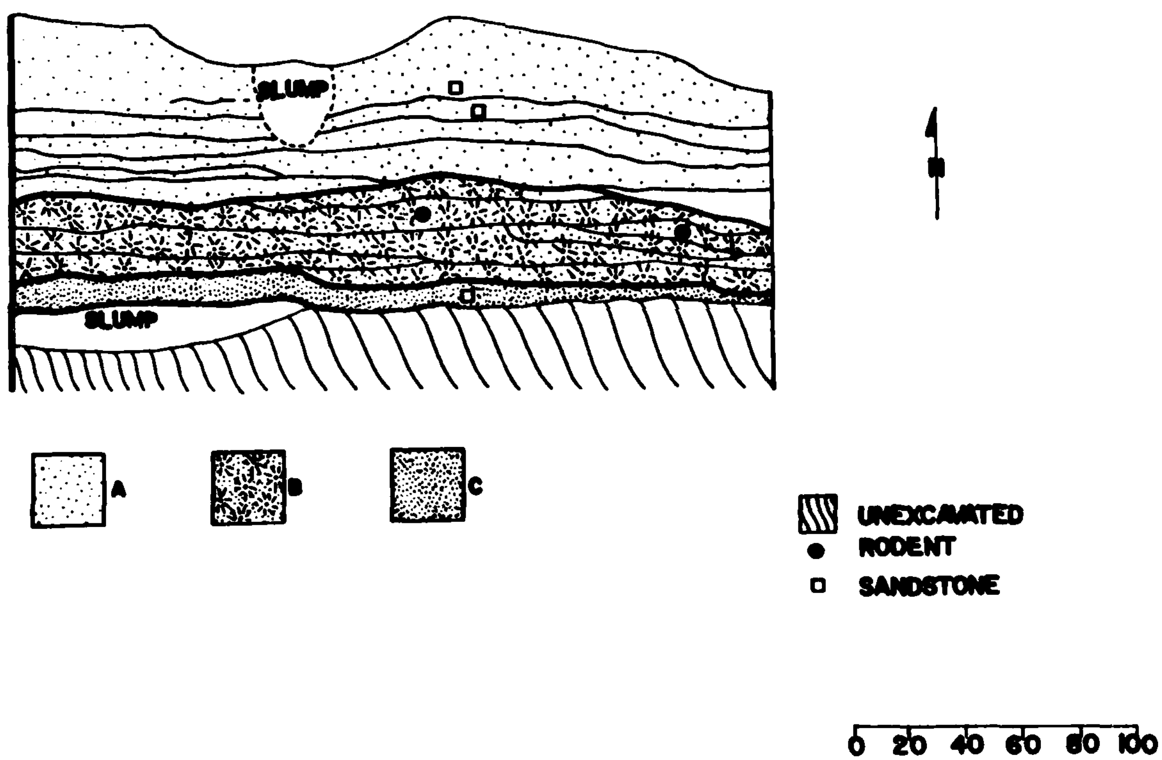


FIGURE 12: Stratigraphic Profile of the South Face from the Williams Site (340S160)

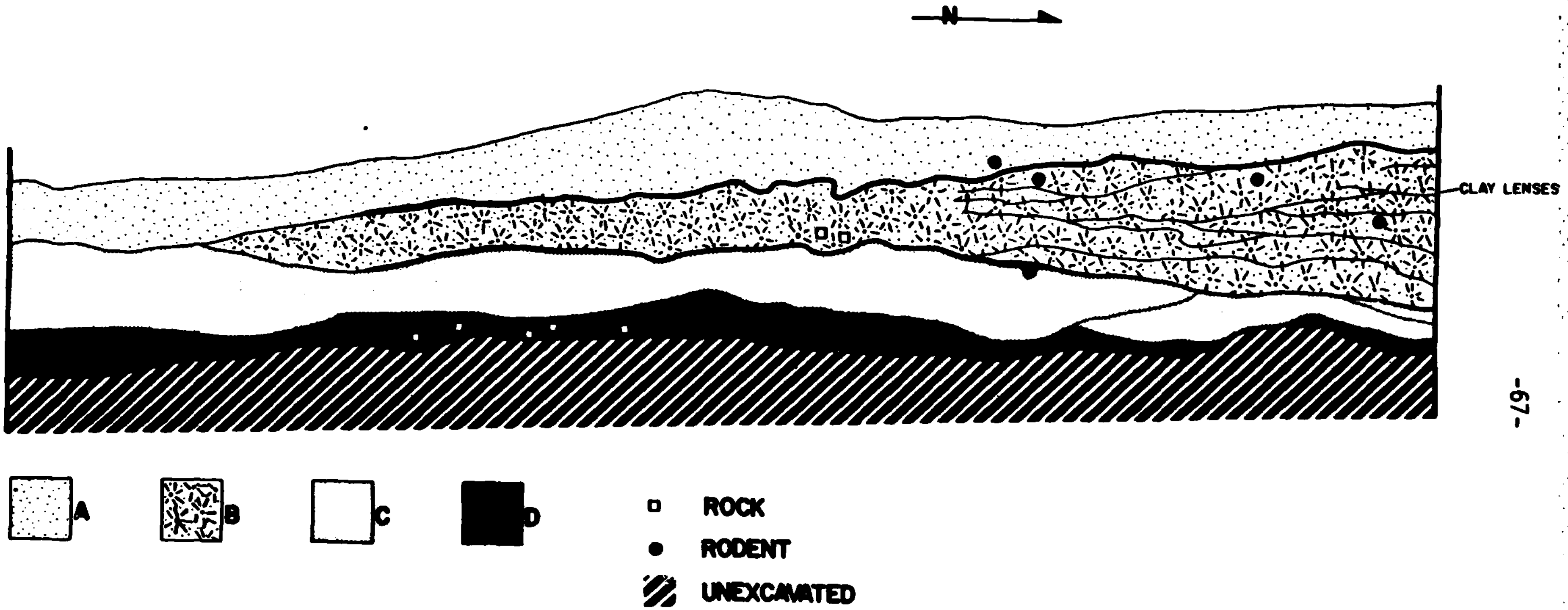
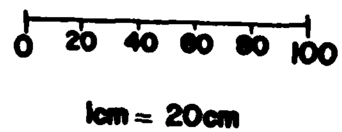


FIGURE 13: Stratigraphic Profile of the West Face, Block B, from the Williams Site (340S160)



western profile, Layer C was not distinguishable in the north/profile. Layer B and C are likely the same depositional unit with its upper and lower portions having undergone slightly different post-depositional modifications.

Stratigraphic layer D is the lowermost sediment layer exposed by 1979 excavations. Layer D is characterized as a dark yellowish brown (10YR4/4) sandy silt which has a noticeable clay fraction present. Layer D contains the living floor represented by Feature 2 and in all likelihood Feature 3.

The soils at the Williams site are classified as Cleora (fine sandy loam), on the floodplain, with parts of the Niotaze-Darnell Complex forming the soils of the upland slopes.

Features

Three well-defined features were encountered during the course of 1979 excavations at the Williams Site. All three were hearth features with two of them likely defining living floors.

Feature 1 - Block A

A concentration of fire-broken sandstone was located approximately 40cm below the surface near the center of Block A. The main area of the feature was approximately 60cm in width (E/W) and 100cm in length (N/S). The rock concentration was one layer thick with no evidence of charcoal or burned earth. Several pieces of groundstone were found in and near the feature.

Feature 2 - Block B (Figure 11)

Several concentrations of fire-broken rock surrounded with a scattering of fire-broken and non-burned sandstone fragments comprise this feature. The concentrations are located in the southwestern portions of Block B and were resting some 85-100cm below the surface. Small amounts of charcoal were seen in both hearth areas. These burned rock concentrations and associated scatter of artifacts are indicative of a prehistoric living floor. The distribution and density

of the materials from this floor suggests that the concentration continues towards the southwest from the excavated area.

Feature 3 - Block C

The feature consists of a light scatter of burned sandstone covering approximately 1 sq m in the western end of the block at approximately 60cm below surface.

Material Culture

The artifacts recovered from the Williams Site are predominantly in the form of chipped stone elements, although limited numbers of ground stone specimens and pottery sherds were also reported.

The chipped stone assemblage consists of 92 tools and 6,972 non-tool elements. The artifactual assemblages are presented according to 5 major excavation units: excavation blocks A, B and C; the hearth area; and the isolated test units excavated west of block C.

Although 92 tools represent a relatively large assemblage when compared to other prehistoric sites in Hominy Creek Valley, the size of the sample is more of an expression of the extent of the excavation than a high tool density. In fact, the highest tool density for the excavation (Block A, 40-50) yielded a density of just under one specimen for each 10cm. The limited tool density precludes a rigorous statistical examination of the vertical and horizontal distributions of tool forms because of insufficient sample sizes.

In regard to the configuration of tool-kits, i.e. the relative proportions by which tool classes occur in an assemblage, the assemblages from Block A 40-50 is probably the most representative (Table 16). Although the assemblage appears to be approaching the sample threshold where all tool classes are filled, the sample size is probably still inadequate for precisely defining the quantitative differences in the proportionate representation of the various tool classes.

TABLE 16

Distribution of Tools at the Williams Site (340S160)

	Block A								Block B								Block C							
	S	N	BU	P	D	RP	BI	PT	S	N	BU	P	D	RP	BI	PT	S	N	BU	P	D	RP	BI	PT
10-20							1																	1
20-30																							1	2
30-40	1	1				3	3										3						2	
40-50	5	1		1	1	3	3	3																
50-60	1						2	3															1	2
60-70																								
70-80									1					1	3	2		1						
80-90										1			1	1	3	2			1					
90-100									2						1	3								
100-110														1	1	3								
110-120														1										
120-130														1		1								
130-140													1		1	1								
140-150																1								
Total	7	2	0	1	1	6	9	6	3	1	0	0	2	5	9	13	3	1	1	0	0	0	4	5

CODE: S = Scraper D = Drill
N = Notch RP = Retouched Piece
BU = Burin BI = Biface
P = Perforator PT = Point

In fact, a previous study of the Late Prehistoric horizons from the nearby Big Hawk Shelter (Henry, 1978a) indicated that approximately 30 tools are needed before an assemblage can be accurately defined according to the proportionate representation of its different tool classes.

While considerable variability in the assemblages appears to be induced by the variation in sample sizes, a few tool classes consistently dominate the assemblages. Point, biface, retouched piece, and scraper classes are the most frequently represented.

The assemblages from the Williams Site exhibit large corner-notched points of Ensor-Marcos types (Figure 14: b,d) and Gary-like dart points (Figure 14:c,f,g). The recovery of only 2 Scallorn points reflects the paucity of small corner-notched points at the site. Point fragments in the form of tips, bases and mid-sections further suggest a predominance of large corner-notched points and contracting stem dart points at the site.

The biface class forms another principal part of the Williams Site assemblages. Although most of the bifaces are fragmentary a few complete or near complete forms imply that large ovate (Figure 15:i) and lanceolate types are the most common.

The retouched piece class did not reveal any strong patterns in vertical or horizontal distributions. Approximately 25% of the retouched pieces, however, were formed by inverse retouch which is a variety that generally occurs in much lower frequencies.

While scrapers constitute a well represented tool class for the site, there is marked variation in respect to the site, there is marked variation in respect to bit width and thicknesses (Figure 15: a, b, d, e, f, g). Of the 12 scrapers recorded for the site, some 50% are in the form of simple end-scrapers or thin flakes with rounded working bits.

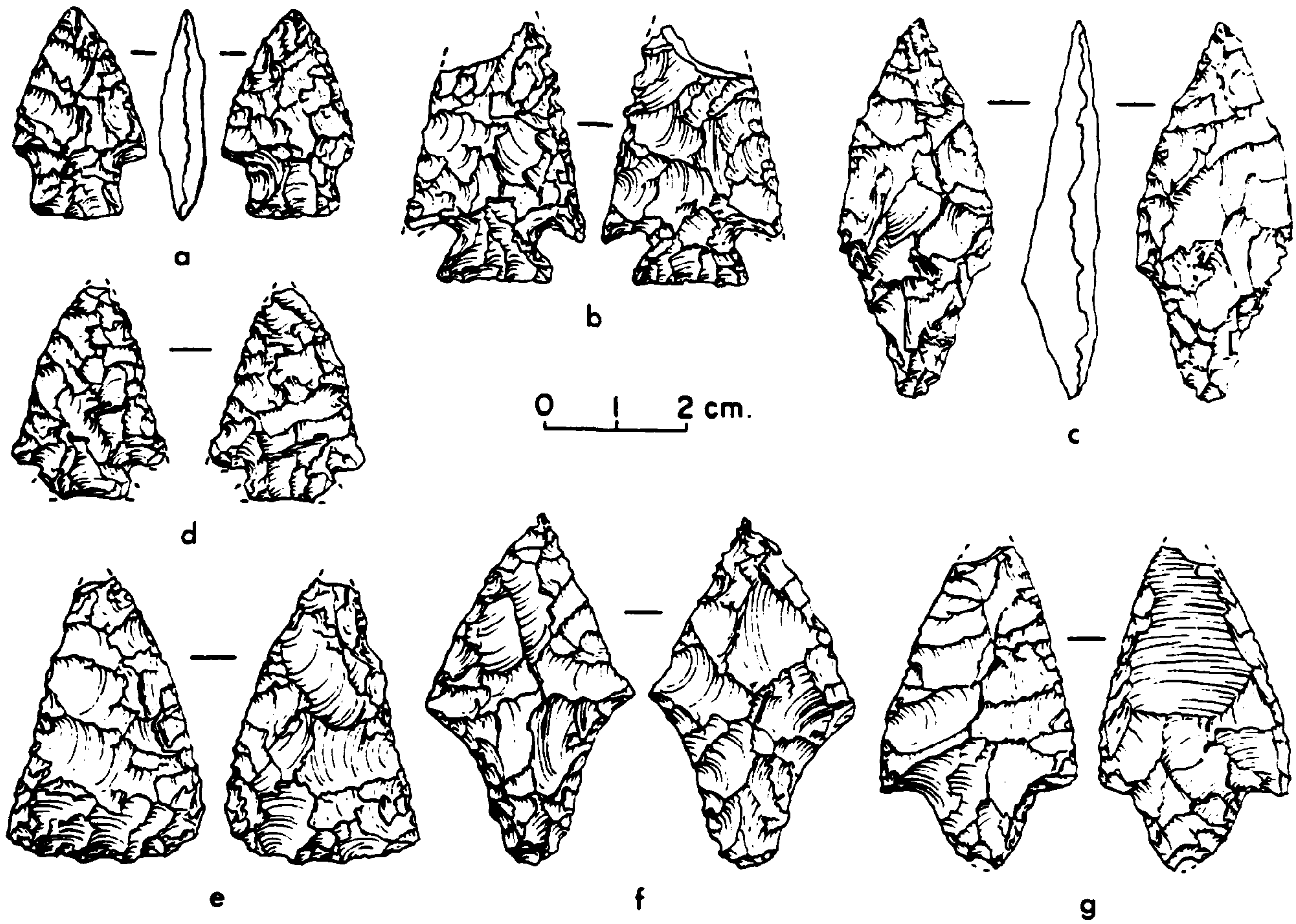


FIGURE 14: Selected Chipped STone Tools from the Williams Site (340S160): Corner-notched point (a), Ensor-Marcos points (b,d), Gary points (C,f,g), Triangular point (e).

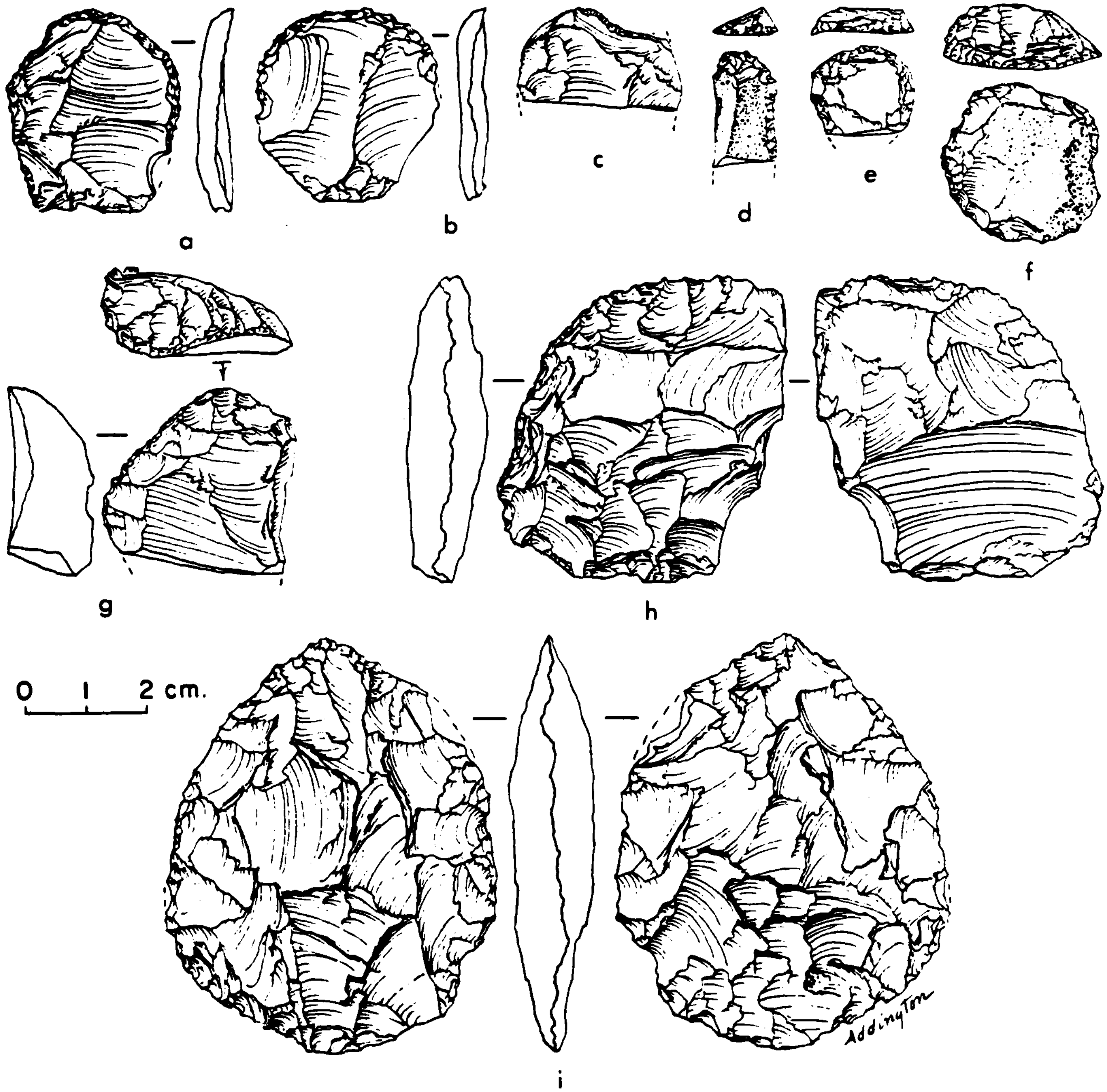


FIGURE 15: Selected Chipped Stone Tools from the Williams Site (340S160) Simple end-scrapers on flakes (a,b,e), Shouldered scraper on flake (c) end-scraper on blade (d), circular scraper (f) end-scraper on thick flake (g), assuymetric biface (h), Ovate biface (i).

The scraper, retouched piece, biface, and point classes represent over 76% of the Williams Site assemblage. Notches, burins, perforations, and drills compose the remainder of the tool-kits. The notches are predominantly formed by a single retouched concavity along a lateral margin of a flake with the diameters of the concavities ranging from 3mm to 5mm. A single burin was identified. The burin was fabricated on a distal snap of a large corner-notched point with a number of burin blows appearing along both edges of the point. The flake scars emanating from the snap are clearly not the result of impact spalls, but represent a deliberate attempt to modify the point subsequent to the distal snap. A single simple perforator fabricated at the juncture of adjacent retouched concavities on the lateral edge of a flake was also identified. Three drills comprising a bit and 2 bases were recorded. The bases are bifacially worked and oval in form, while the bits display characteristic diamond shaped cross-sections.

The almost 7,000 non-tool elements exhibit a consistent configuration both vertically and horizontally with tertiary elements dominating (Tables 17, 18,19,20,21). While tertiary elements comprise over 91% of the non-tool elements, bifacial thinning elements constitute 4-5% of the assemblages. The paucity of primary and secondary elements coupled with the recovery of only a single core clearly documents the lack of primary lithic processing activities at the site. Evidently most of the lithic processing conducted at the site focused on the final stages of stone tool fabrication.

Aside from the chipped stone industry, 13 groundstone specimens and 2 pottery sherds were recovered. The groundstone specimens consist of 9 mano fragments, 3 nutting stones, and a hammerstone (see Appendix A). The two pottery sherds were grit tempered, but their interior and exterior surfaces were so deteriorated that surface finish could not be as rtained.

TABLE 17

Non-tool Element Densities, Counts, and Frequencies from The Williams Site (340S160), Block A. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.D.	Non-tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Core Thinning Element		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	N	%	
0-20	0.4	0	-	0	-	24	100.0	0	-	0	-	0	-	24
20-30	3.9	0	-	1	0.9	98	93.3	6	5.7	0	-	0	-	105
30-40	17.9	0	-	11	2.3	445	92.1	24	5.0	0	-	3	0.6	483
40-50	45.4	0	-	14	1.1	1142	93.1	66	5.4	1	0.1	4	0.3	1227
50-60	19.4	0	-	6	1.1	499	95.2	17	3.2	0	-	2	0.4	524
Total		0	-	32	1.4	2208	93.4	113	4.8	1	0.04	9	0.4	2363

TABLE 18

Non-tool* Element Densities, Counts, and Frequencies from The Williams Site (34OS160), Block B. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.D.	Non-tool Density	Primary N	Primary %	Secondary N	Secondary %	Tertiary N	Tertiary %	Bifacial Thinning N	Bifacial Thinning %	Chunk N	Chunk %	Core N	Core %	Total
70-80	35.0	1	0.5	7	3.5	187	93.0	6	3.0	0	-	0	-	201
80-90	41.0	0	-	3	1.3	220	93.2	13	5.5	0	-	0	-	236
90-100	21.9	0	-	1	0.8	120	94.5	5	3.9	1	0.8	0	-	127
100-110	17.4	1	1.0	0	-	94	94.0	3	3.0	1	1.0	1	1.0	100
110-120	11.8	0	-	0	-	65	95.6	2	2.9	1	1.5	0	-	68
120-130	7.5	0	-	0	-	39	90.7	3	7.0	1	2.3	0	-	43
130-140	7.1	0	-	1	0.8	118	96.7	3	2.5	0	-	0	-	122
140-150	1.03	0	-	0	-	29	93.5	2	6.5	0	-	0	-	31
150-160	0.3	0	-	0	-	2	100.0	0	-	0	-	0	-	2
Total		2	0.1	12	1.3	874	94.0	37	4.0	4	0.4	1	0.1	930

* NW quads plus 2 one meter units at the south end of Block B were dug and bagged separtely from the other 75% of the Block. Levels 130-140, 140-150, and 150-160 were also excavated by quads by unit rather than as a complete unit Block B, and bagged separtely

TABLE 19

Non-tool Element Densities, Counts, and Frequencies from The Williams Site (34OS160), Block C. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.D.	Non-tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
0-20	0.5	0	-	0	-	1	100.0	0	-	0	-	1
20-30	3.0	0	-	0	-	3	100.0	0	-	0	-	3
30-40	18.0	0	-	0	-	18	100.0	0	-	0	-	18
40-50	19.0	0	-	1	5.3	17	89.4	1	5.3	0	-	19
50-60	36.0	0	-	0	-	34	94.4	2	5.6	0	-	36
60-70	32.0	0	-	0	-	58	90.6	4	6.3	2	3.4	64
70-80	26.4	0	-	3	1.6	172	93.0	7	3.8	3	1.6	185
80-90	23.6	1	0.6	2	1.2	150	90.9	9	5.5	3	1.8	165
90-100	12.0	0	-	2	2.4	76	90.4	3	3.6	3	3.6	84
100-110	10.7	0	-	0	-	31	96.9	1	3.1	0	-	32
110-120	10.0	0	-	0	-	16	80.0	4	20.0	0	-	20
120-130	10.0	0	-	0	-	19	95.0	1	5.0	0	-	20
130-140	3.0	0	-	1	16.7	5	83.3	0	-	0	-	6
140-150	3.5	0	-	1	14.3	6	85.7	0	-	0	-	7
Total		1	0.2	10	1.5	606	91.8	32	4.8	11	1.8	660

TABLE 20

Non-tool Element Densities, Counts, and Frequencies from The Williams Site (340S 160).*
Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.P.	Non-tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
0-10	18.7	0	-	2	1.9	97	94.2	4	3.9	0	-	103
10-20	29.6	0	-	2	1.2	150	92.0	6	3.7	5	3.1	163
20-30	40.6	0	-	3	1.5	193	95.1	7	3.4	0	-	203
30-40	43.0	0	-	3	1.4	207	96.3	3	1.4	2	0.9	215
40-50	52.8	0	-	3	1.1	246	93.2	12	4.5	3	1.1	264
50-60	37.0	0	-	1	0.5	173	93.5	11	5.9	0	-	185
60-70	21.3	0	-	1	0.8	123	96.1	2	1.6	2	1.6	128
70-80	17.2	0	-	0	-	81	94.2	5	5.8	0	-	86
80-90	1.0	0	-	0	-	1	100.0	0	-	0	-	1
Total		0	-	15	1.1	1271	94.3	50	3.7	12	0.9	1348

* Individual units located between Blocks A and B.

TABLE 21

Non-tool Element Densities, Counts, and Frequencies from The Williams Site (340S160), Hearth. Non-tool Density is based upon the number of elements per 0.1 cubic meter of excavated fill.

Level B.D.	Non-tool Density	Primary		Secondary		Tertiary		Bifacial Thinning		Chunk		Total
		N	%	N	%	N	%	N	%	N	%	
0-10	4.0	0	-	0	-	8	100.0	0	-	0	-	8
10-20	10.4	0	-	0	-	50	96.2	2	3.8	0	-	52
20-30	10.9	0	-	1	1.3	71	93.4	4	5.3	0	-	76
30-40	17.9	0	-	0	-	110	88.0	13	10.4	2	1.6	125
40-50	24.7	0	-	1	0.6	159	91.9	9	5.2	4	2.3	173
50-60	35.7	1	0.4	5	2.0	234	93.6	9	3.6	1	0.4	250
60-70	38.3	0	-	3	1.1	249	92.9	14	5.2	2	0.7	268
70-80	29.4	0	-	0	-	194	94.2	8	3.9	4	1.9	206
80-90	39.4	0	-	3	1.1	258	93.5	10	3.6	5	1.8	276
90-100	39.5	0	-	1	0.4	221	93.2	11	4.6	4	1.7	237
Total		1	0.1	14	0.8	1554	93.0	80	4.8	22	1.3	1671

Raw Material Utilization

The tools and non-tools, which could be identified as to raw material variety, from excavation Blocks A, B and C display a consistent pattern. Florence and Keokuk cherts were the most prevalently used with Keokuk comprising some 52-60% of the assemblages (Tables 22,23 and 24).

Intra-Site Patterns

An examination of the stratigraphic distribution of non-tool elements, according to their relative densities, shows two intervals which reflect a greater intensity of occupation within the investigated area of the site (Figure 16). Furthermore these intervals appear to be stratigraphically correlated with the Features 1, 2, and 3 which are viewed as evidence for living floors. Within Block A a non-tool density peak in non-tool density appears at level 40-50cm, while Block B exhibits non-tool density peaks in levels 30-40cm and 80-90cm below surface. It should be noted, however, that the surface of Block B is considerably lower (on the order of 70cm) than either Block A or Block C (as indicated by below datum readings of 70-80cm for the 10-20cm interval below surface). Thus, while both below datum and below surface elevations for the non-tool density peaks and living floors of Blocks A and B differ by some 10cm, they nevertheless probably represent the same occupational episode on a slightly irregular paleo-surface. The non-tool densities of the isolated test units between Blocks A and B provide further support for this proposal as they display a peak density at 40-50cm below datum (Table 20).

In the lower part of Block B at a depth of 80-90cm below surface (130-140cm below datum) another peak occurs. This lower high density interval appears to correlate with a non-tool density peak between 70cm and 90cm below

TABLE 22

Raw Material Varieties from The Williams Site (34OS160), Block A.

	N	Florence %	Foraker %	Keokuk %	Talequah %	Neva %	Other %	Heat-treated %
0-20 B.D.								
Tools	1	100.0	-	-	-	-	-	100.0
Non-tools	24	25.0	70.8	-	-	4.2	-	79.2
20-30 B.D.								
Tools	0	-	-	-	-	-	-	-
Non-tools	105	29.5	4.8	62.9	-	2.8	-	67.6
30-40 B.D.								
Tools	9	55.6	-	44.4	-	-	-	66.7
Non-tools	483	43.7	0.8	53.2	1.0	1.2	-	66.9
40-50 B.D.								
Tools	19	52.6	-	42.1	-	5.2	-	78.9
Non-tools	1227	36.5	0.2	59.9	2.3	0.9	0.2	67.4
50-60 B.D.								
Tools	4	25.0	-	75.0	-	-	-	25.0
Non-tools	524	45.8	0.6	52.1	1.3	0.2	-	68.3
Total								
Tools	33	51.5	-	45.5	-	3.9	-	69.7
Non-tools	2363	39.7	1.3	56.3	1.7	0.7	0.1	67.6

TABLE 23

Raw Material Varieties from The Williams Site (34OS160), Block B, omitting the NW quads.

	N	Florence %	Foraker %	Keokuk %	Tahlequah %	Neva %	Heat-treated %
70-80 B.D.							
Tools	6	-	-	66.7	-	33.3	16.7
Non-tools	281	39.9	0.7	59.4	-	-	68.3
80-90 B.D.							
Tools	5	40.0	-	60.0	-	-	80.0
Non-tools	1063	33.9	0.2	62.2	2.4	1.3	76.1
90-100 B.D.							
Tools	3	66.7	-	33.3	-	-	33.3
Non-tools	421	44.6	0.5	53.7	1.2	-	73.6
100-110 B.D.							
Tools	3	33.3	-	66.7	-	-	66.7
Non-tools	345	39.4	0.6	58.3	-	1.7	74.2
110-120 B.D.							
Tools	1	-	-	100.0	-	-	-
Non-tools	78	44.9	3.8	48.7	2.6	-	69.2
120-130 B.D.							
Tools	1	-	-	100.0	-	-	-
Non-tools	87	39.1	-	57.5	3.4	-	69.0
Total							
Tools	19	26.3	-	63.2	-	10.5	42.1
Non-tools	2275	38.0	0.5	59.0	1.6	0.9	73.9

TABLE 24

Raw Material Varieties from The Williams Site (34OS160), Block C.

	N	Florence %	Foraker %	Keokuk %	Tahlequah %	Neva %	Heat-treated %
10-20 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	1	100.0	-	-	-	-	100.0
20-30 B.D.							
Tools	1	100.0	-	-	-	-	100.0
Non-tools	3	-	-	100.0	-	-	33.3
30-40 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	18	38.9	5.6	55.5	-	-	66.7
40-50 B.D.							
Tools	1	100.0	-	-	-	-	100.0
Non-tools	19	47.4	-	52.6	-	-	73.7
50-60 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	36	44.4	-	55.6	-	-	91.7
60-70 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	64	43.8	-	59.7	-	1.6	79.7
70-80 B.D.							
Tools	2	100.0	-	-	-	-	-
Non-tools	185	44.9	0.5	54.6	-	-	77.8
80-90 B.D.							
Tools	1	-	-	100.0	-	-	-
Non-tools	165	45.5	1.2	53.3	-	-	70.9
90-100 B.D.							
Tools	1	100.0	-	-	-	-	100.0
Non-tools	84	51.2	-	48.8	-	-	73.8
100-110 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	32	50.0	3.1	46.9	-	-	78.1
110-120 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	20	45.0	-	55.0	-	-	65.0
120-130 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	20	65.0	-	35.0	-	-	85.0
130-140 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	6	50.0	-	50.0	-	-	66.7
140-150 B.D.							
Tools	0	-	-	-	-	-	-
Non-tools	7	57.1	-	42.9	-	-	85.7
Total							
Tools	5	80.0	-	20.0	-	-	60.0
Non-tools	660	46.5	0.8	52.6	-	0.2	71.5

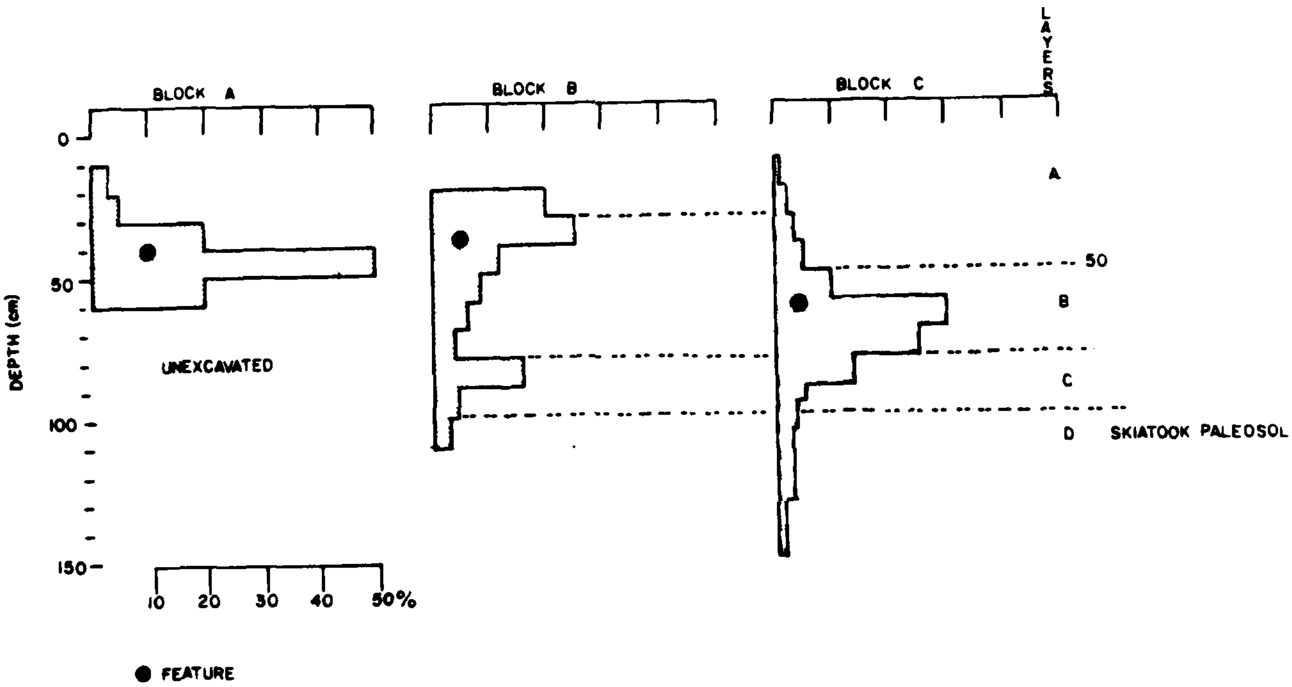


FIGURE 16: Bar Graph Showing Verical Distribution of Densities of Non-tool Elements by Excavation Blocks at the Williams Site (34OS160).

surface in Block C. Furthermore, Feature 3 is found at the 60-70cm level in Block C and may be associated with the high densities of non-tool elements in the two blocks.

Summary and Conclusions

Although the subsurface and surface distribution of artifacts cover some 20,000 sq m at the Williams Site, the site appears to have been only ephemerally occupied by relatively small groups during the Plains Woodland Period.

The block excavations of the Phase III investigation documented 2 stratified living floors which have different spatial distributions and are not superimposed. While neither of these living floor areas were entirely defined, they appear to have represented rather small ephemeral occupations with little evidence for permanency. Trash pits, post molds, or other features suggestive of a more permanent encampment were absent although the nature of the site's sediment is ideal for the identification of such subtle patterns. Burned rock concentrations constitute the only features identified at the site.

The geomorphic position of the site on the first terrace of Hominy Creek (modern floodplain noted as T-0) implies a floodplain setting for the various Woodland occupations. The location of the site within a large meander loop of Hominy Creek at its confluence with Lost Creek was no doubt a favored encampment area for the Woodland Period groups. The availability of water, easy access to the uplands along Lost Creek, and a near level sandy area along the north bank of Hominy Creek all made the site an ideal camping area.

The rapidly aggrading alluvial environment appears to have sealed the relic occupations intermittently, thus obscuring the evidence of previous occupations from subsequent occupants of the site. If the evidence of former occupations had been visible to groups returning to the site or coming at a

later time, it is likely that they would have reoccupied the specific locus of an older occupation in order to utilize abandoned sandstone and chert resources. Rather than collecting sandstone from the outcrops along the valley flanks, some 100m to 300m away, the inhabitants of the site would probably have used abandoned hearth stones for construction of new fire pits. The absence of chert sources in the valley would have induced a similar economizing behavior in respect to chert resources. The rapidity by which the sites were covered, however, obscured earlier occupations and allowed groups to camp within the general locale. As a consequence of the rapid aggradation and the absence of specific locational parameters for the numerous occupations some 20,000 sq m were eventually littered with Woodland Period artifacts. As an expression of the rate of aggradation the artifacts recovered from 150cm of deposit are characteristic of early Middle Woodland period dating to around A.D. 500.

Summary of the Investigations

Donald O. Henry

The emphasis upon the excavation of floodplain sites during the Phase III investigation provided a more precise correlation of the valley's alluvial history and prehistoric cultural-chronology. The evidence recovered from the open floodplain sites also contributed to a better understanding of the Late Prehistoric settlement pattern for the valley.

Depositional History

The geomorphic history of the valley related to its earliest recorded prehistoric occupation begins subsequent to the erosion of the thick red Skiatook Paleosol (Figure 17 and 18). The age of the paleosol and its erosion remains unclear, although the erosional episode must have occurred prior to 31±76 B.C. (SMU -357) as indicated by a date from overlying alluvium. Although late Archaic artifacts have been recovered from some 40cm within the Skiatook Paleosol at the Hominy Bridge Site (34OS105), several characteristics of the paleosol suggest a Pleistocene age. The paleosol's strong 5-7.5 YR values in conjunction with high clay content formed within sand parent material imply considerable age. A possible resolution to these conflicting lines of evidence may be that the artifacts found within the Skiatook Paleosol were intrusive. Due to its high clay content the Skiatook Paleosol (identified as the Neotaze series by the Soil Conservation Service) displays an exceedingly high shrink-swell index which results in vertical cracks forming along peds during periods of drought. It is possible, then, that the artifactual debris of Late Archaic encampments on the eroded surface of the Skiatook Paleosol could have been introduced to some 40cm

AD-A120 743 THE PREHISTORY AND PALEOENVIRONMENT OF HOMINY CREEK VALLEY 1979 FIELD SEASON(U) TULSA UNIV OK LAB OF ARCHAEOLOGY D O HENRY 82 DACW56-77-C-0222 2/2

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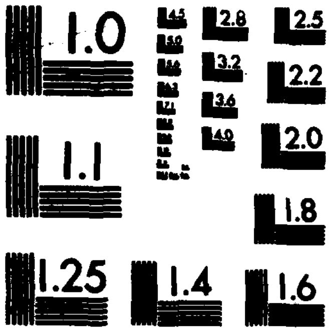
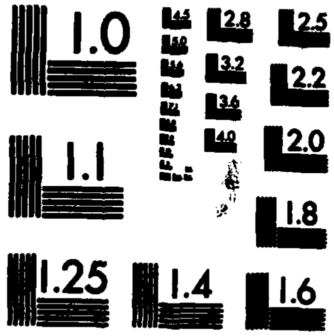
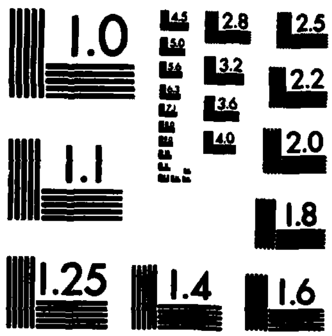




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



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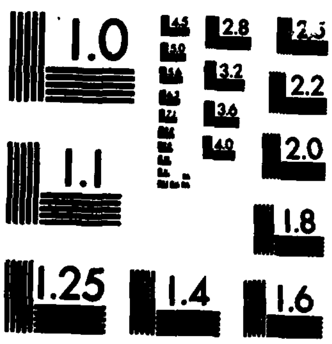

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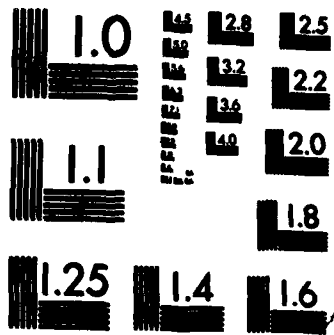

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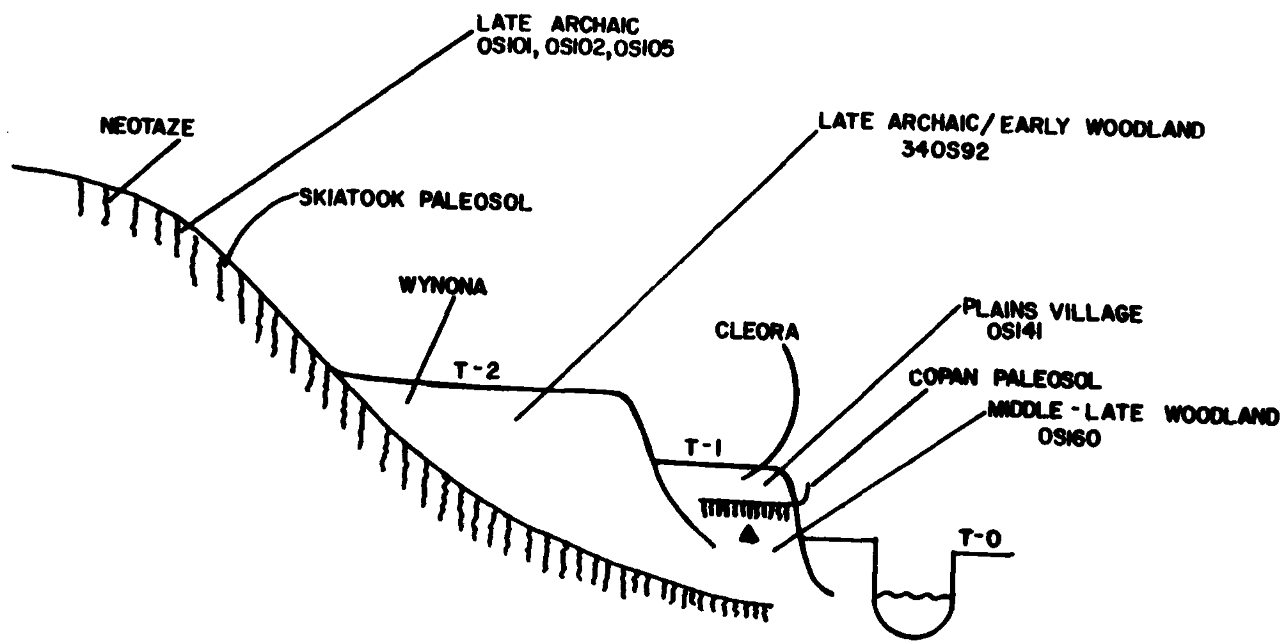

FIGURE 17: Cross-section of Hominy Creek Valley Showing the Alluvial Units, Paleosols, Terraces, and Locations of Archaeologic Sites. Soil Series According to Soil Conservation Service Classification are also Indicated.

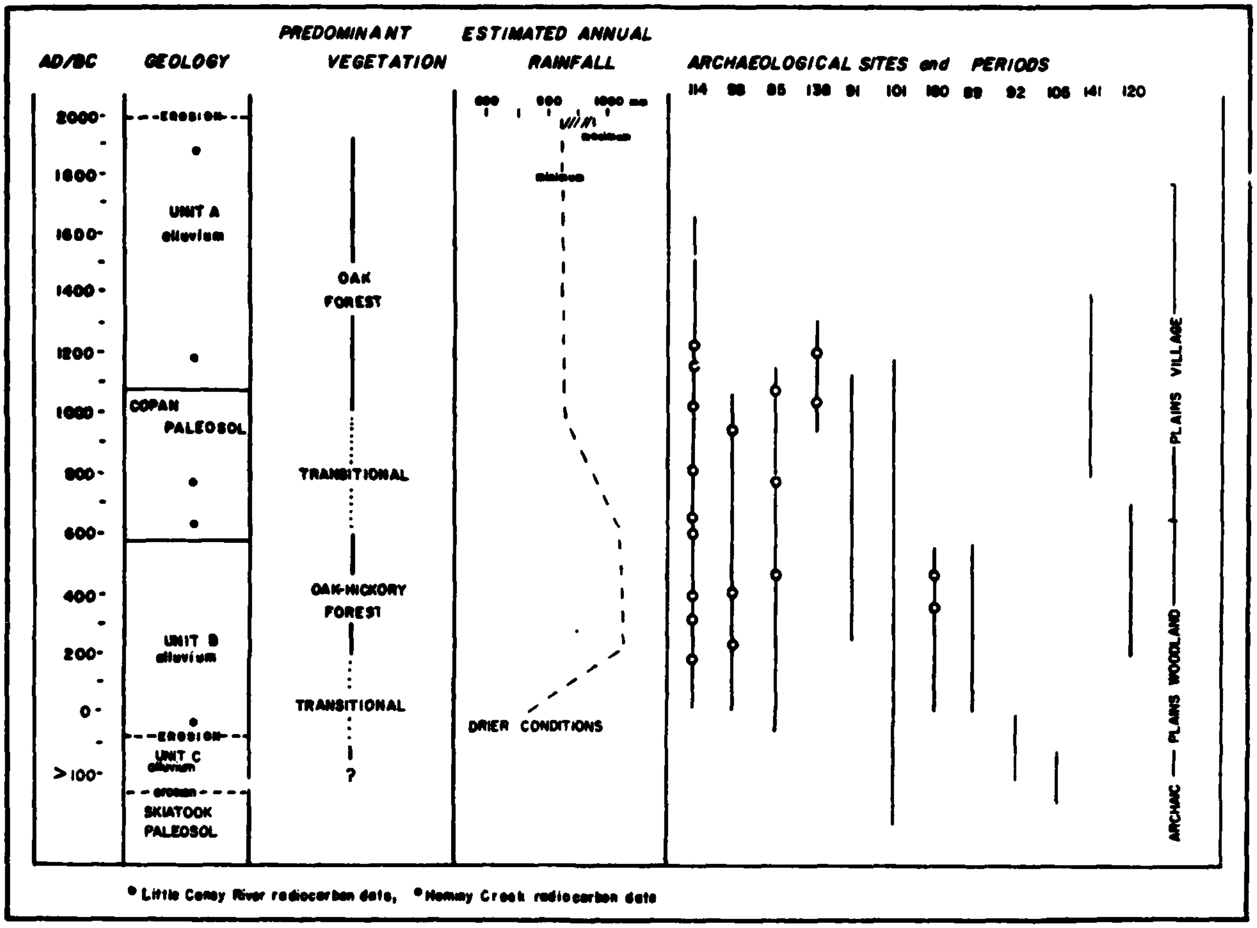

FIGURE 18: Chart Showing the Relationship of the Prehistoric Occupations to the Alluvial History of the Valley with Suggested Environmental and Climatic Settings.

into the paleosol through cracks. While the age of the Skiatook Paleosol remains an important unresolved problem, its distribution is clearly closely linked to the occurrence of Archaic sites within the valley. Archaic components have been recorded within or directly on the Skiatook Paleosol at the Hominy Bend Site (34OS101), the Hominy Bridge Site (34OS105), and 34OS102. The seemingly related distributions of Archaic sites and the Skiatook Paleosol may indicate that the eroded paleosol provided an Archaic age surface. Such a proposal would imply that the valley, particularly the uplands, experienced a predominantly degradational environment during its Archaic occupation.

Alternatively, one might argue that the Archaic occupation of the valley was associated with an aggradational interval and that subsequent erosion removed these Archaic age sediments, but left artifact concentrations on an eroded surface formed by the more resistant Skiatook Paleosol B-horizon. Such an argument, however, is not consistent with the field evidence. Given the considerable slope that characterizes the surfaces of the sites and the requisite velocity of sheet wash which would have been necessary to remove the overlying sediments plus the underlying Skiatook Paleosol B-horizon, it seems highly unlikely that such active processes could have occurred without also removing the artifacts.

Following the erosion of the Skiatook Paleosol, an allu[illegible] episode began. The deposition of Unit C alluvium took place during Late Archa[illegible] [illegible]iddle Woodland times. The Unit C alluvium, classified as the Wynona soil series, forms the second terrace some 8.30m above the modern channel and contains the Late Archaic - Woodland Oxbow Site (34OS92). Although this period of the valley's aggradation remains undated, it probably took place during the first few centuries B.C. Sites located on this second terrace and within the Wynona sediments should provide environmental and cultural evidence for the Late Archaic-Woodland transition.

Subsequent to the deposition of Unit C, the channel incised itself some 5m followed by the deposition of over 3m of Unit B alluvium. The first terrace, some 6m above the present channel, defines the maximum aggradation of this interval. Unit B alluvium is associated with the Cleora soil series as classified by the Soil Conservation Service. The deposition of Unit B alluvium began during the first century B.C. and continued until the formation of the Copan Paleosol at about A.D. 650. The Middle Woodland Williams Site (34OS160) is found to a depth of 1.5m in Cleora sediments (Unit B alluvium) on this first terrace and dates to A.D. 510±80 (SMU-231).

The rate of alluvial deposition within Hominy Creek Valley appears to have slowed after A.D. 650 and to have reached equilibrium with soil forming processes thus allowing for the development of the Copan Paleosol between A.D. 650 and about A.D. 1100. Some time after A.D. 1100 the Copan Paleosol was terminated by the deposition of Unit A alluvium which appears to be lithologically similar to Unit B alluvium as it is also classified as part of the Cleora soil series. This aggradational episode continued until the later part of the last century when a modern period of downcutting ensued. Archaeological sites associated with Unit A alluvium would therefore represent Plains Village and historic age occurrences. The New Bridge Site (34OS141) is an example of a late Plains Village Period occurrence resting in Unit A alluvium.

Chronologic Problems

One of the fundamental problems in studying the sites situated on the floodplain of the valley is ascertaining their precise ages. While geomorphic associations normally allow for the differentiation between Archaic and Late Prehistoric occurrences, both Woodland and Plains Village occupations are found within the same Cleora series alluvium and on the first terrace. The Woodland and Plains Village alluvial units (B and A, respectively) can only be distinguished

in reference to the Copan Paleosol. Unfortunately, the Copan Paleosol appears to pinch out up the valley.

Although a geomorphic approach to chronologically ordering archaeological occurrences is admittedly a wide parameter technique, it does have some utility when one is confronted with large numbers of sites which yield low densities of artifacts, lack diagnostic elements, and fail to furnish datable materials. It is noteworthy that during the Phase III investigation only 4 of the 13 investigated sites yielded diagnostic artifacts and only 1 yielded datable materials. Of the 9 sites lacking diagnostic materials, all but 2 could be assigned to a prehistoric period based on geomorphic setting.

Settlement Patterns

Given the limited occurrence of Archaic age sediments and sites in primary archaeological context, discussions of prehistoric settlement patterns within Hominy Creek Valley are confined to the Plains Woodland and Plains Village periods. In that the settlement patterns for the Late Prehistoric inhabitants of the valley were essentially the same for these two periods, they can be described as a single system. The continuity in settlement patterns throughout the Late Prehistoric period is clearly reflected in the continued occupation of many of the sites during both Woodland and Plains Village times (Table 25).

The previous investigations of cave and rockshelter occupations in the valley produced significant information in regard to site activities, economy, and seasonality of residence (Henry, 1977b, 1978a, 1978b). The evidence accumulated during these early investigations was viewed as indicating the existence of a central based circulating pattern of settlement. Specifically, it was suggested that the Late Prehistoric inhabitants of the valley lived in small dispersed groups (i.e. micro-band) from late summer through winter and congregated into larger groups (i.e. macro-bands) during the spring through mid-summer.

TABLE 25

SUMMARY OF DATA FOR INVESTIGATED SITES

Variable	Copperhead Cave-340S85 Plains Woodland Levels 13-15	Copperhead Cave-340S85 Plains Village Levels 3-12	Turkey Creek Shelter-340S91 Plains Woodland Strata A/B, B	Turkey Creek Shelter-340S91 Plains Village Strata A	Oxbow Site-340S92 Plains Woodland Levels 1-5
$\bar{X}$ Non-tool density	144.6	43.1	5.2	4.1	9.5
X Tool-to-Non-tool Ratio	1:34	1:36	1:37	1:22	1:27.2
NON-TOOLS (PERCENT)*					
Core	-	-	-	-	0.2
Primary Element	0.1	0.1	0.5	-	0.6
Secondary Element	2.7	2.0	5.2	6.6	5.8
Tertiary Element	86.3	90.4	86.0	83.2	89.0
Bifacial Thinning Element	10.8	7.4	8.2	9.2	4.3
N	*729*	*1,715*	*840*	*196*	*463*
TOOLS (PERCENT)					
Scraper	-	-	4.3	-	11.8
Denticulate	-	-	-	-	-
Notch	-	-	4.3	-	-
Burin	-	-	-	-	-
Perforator	-	-	4.3	-	5.9
Drill	4.7	-	-	-	5.9
Retouched Piece	9.5	17.0	30.4	11.1	23.5
Knife	4.7	2.1	-	-	-
Dart Point	-	-	-	-	23.5
Biface	52.4	27.7	4.3	11.1	17.6
Point	28.6	53.2	52.2	77.8	11.8
N	*21*	*47*	*23*	*9*	*17*
AREA (sq m)	112	112	375	375	+3,000

* Chunk percentage omitted from table

** Phase II and III combined

Table 25 cont.

Variable	Bull Creek Shelter-34OS95	Cedar Creek Shelter-34OS98		Hominy Bend Site-34OS101		34OS102
	Plains Village Levels 4-11 B.D.	Plains Woodland Levels 4-8	Plains Village Levels 1-3	Plains Woodland Level 3	Plains Village Level 1	Plains Archaic Levels 1-3
X Non-tool density	24.55	353.2	80.7	351.0	340.3	19.4
X Tool-to-Non-tool Ratio	1:39	1:198	1:70	1:185	1:166	1:104
NON-TOOLS (PERCENT)						
Core	-	-	-	+	+	-
Primary Element	-	+	-	0.2	-	-
Secondary Element	2.0	1.0	1.6	1.3	1.7	0.6
Tertiary Element	90.3	96.7	96.2	98.0	95.7	96.1
Bifacial Thinning Element	7.1	2.1	2.2	0.5	2.6	2.9
N	*196*	*6,895*	*3,939*	*3,159*	*6,125*	*311*
TOOLS (PERCENT)						
Scraper	-	2.1	7.1	11.1	10.4	33.3
Denticulate	-	-	-	-	-	-
Notch	-	-	-	5.6	4.2	-
Burin	-	4.2	-	-	2.1	-
Perforator	-	2.1	-	5.6	4.2	-
Drill	-	-	-	5.6	2.1	-
Retouched Piece	16.7	8.3	14.3	38.9	22.9	66.7
Knife	-	2.1	1.8	-	-	-
Dart Point	-	-	-	-	-	-
Biface	16.7	20.8	-	11.1	8.3	-
Point	66.7	60.4	78.6	22.1	45.1	-
N	*6*	*48*	*14*	*18*	*48*	*3*
AREA (sq m)	120	108	108	+1,000	+1,000	2570

Table 25 cont.

Variable	Hominy Bridge Site-34OS105	Big Hawk Shelter-34OS114		34OS120	Cut Finger Cave-34OS138
	Plains Archaic Strata A, B, C	Plains Woodland Levels 7-12	Plains Village Levels 1-6	Plains Woodland Levels 1-5	Plains Village Levels 1-7
$\bar{X}$ Non-tool density	30.9	46.6	52.9	8.6	19.8
$\bar{X}$ Tool-to-Non-tool Ratio	1:164	1:48	1:36	1:87	1:5
NON-TOOLS (PERCENT)					
Core	-	-	-	-	-
Primary Element	2.3	-	0.1	2.3	-
Secondary Element	9.0	2.3	2.4	5.7	1.8
Tertiary Element	86.4	91.3	93.3	90.8	96.1
Bifacial Thinning Element	2.2	6.4	4.1	1.1	2.1
N	*1473*	*2,541*	*4,999*	*87*	*279*
TOOLS (PERCENT)					
Scraper	11.1	9.4	7.8	-	5.3
Denticulate	-	-	2.1	-	-
Notch	-	-	2.8	-	10.5
Burin	-	-	2.1	-	-
Perforator	-	1.8	0.7	-	-
Drill	-	-	-	-	-
Retouched Piece	11.1	16.9	9.2	100.0	10.5
Knife	-	2.1	1.4	-	-
Dart Point	22.2	-	-	-	-
Biface	22.2	11.3	8.5	-	15.8
Point	33.3	58.4	65.7	-	57.9
N	*9*	*53*	*140*	*1*	*20*
AREA (sq m)	+10,000	148	148	1,200	40

Table 25 conclusion

Variable	New Bridge Site - 34OS141 & 141A Plains Village Levels 1-5	The Williams Site Phase III* - 34OS160 Plains Woodland Levels 1-10	The Williams Site Phase II - 34OS160 Plains Woodland Hearth	The Williams Site Phase II - 34OS160 Plains Woodland Levels 1-10
$\bar{X}$ Non-tool density	7.0	21.7	-	17.1
X Tool-to-Non-tool Ratio	1:40	1:93	1:102	1:50
NON-TOOLS (PERCENT)				
Core	-	-	-	-
Primary Element	-	0.04	0.2	0.2
Secondary Element	2.2	1.1	1.4	0.8
Tertiary Element	92.8	94.0	96.7	92.9
Bifacial Thinning Element	5.0	4.2	1.8	5.1
N	278	9247	510	602
TOOLS (PERCENT)				
Scraper	-	16.4	20.0	-
Denticulate	-	-	-	-
Notch	14.2	5.1	20.0	-
Burin	-	1.3	-	-
Perforator	-	1.3	-	-
Drill	-	3.8	-	-
Retouched Piece	42.9	13.9	20.0	50.0
Knife	-	-	20.0	-
Dart Point	-	27.8	-	12.5
Biface	-	30.4	-	12.5
Point	42.9	30.4	20.0	25.0
N	7	79	5	8
AREA (sq m)	+2,000	+20,000	+20,000	+20,000

*Blocks A, B, C only

The proposal was based upon a comparison of site areas, season of residence, intra-assemblage tool-kit diversity, inter-assemblage tool-kit diversity, range in lithic technology according to reduction sequence, artifact density, and tool to non-tool ratios of the sites to the predicted attributes for three hypothetical settlement patterns (Henry, 1977b:159-169). These hypothetical patterns included a radiating pattern (Mortensen, 1972), a restricted circulating pattern, and a central based circulating pattern (Beardsley, et al, 1956; Hole and Flannery, 1967; MacNeish, 1972).

The Phase III investigations of those sites recorded on the Hominy Creek Valley floor contribute to a better overall understanding of the area's prehistoric settlement pattern by furnishing a greater body of evidence from unsheltered sites. Although the organic evidence which is normally well preserved in the cave and rockshelter sites is poorly preserved or absent from the open floodplain occurrences, other data sets are common to all of the sites and allow for comparative studies. Artifact density, tool to non-tool ratios, and site areas are particular useful in determining the intensity by which a site was occupied, the degree by which tools were curated, and the group population of a site's inhabitants.

Although the Late Prehistoric floodplain sites exhibit exceedingly large areas (from +1,000 to +20,000 sq m), they nevertheless appear to represent rather ephemeral encampments by small numbers of people as reflected in their low non-tool densities (Table 25). The Oxbow Site (34OS92), Site 34OS120, New Bridge Site (34OS141), and Williams Site (34OS160) yield very low non-tool densities ranging from 7 to 21 elements per 0.1 cu m. The non-tool densities of these sites are considerably lower than in the sheltered sites. The markedly lower non-tool densities of the floodplain occurrences may be more of an expression of the more widely scatter occupational loci and greater rates of deposition than fewer numbers of occupants. These open floodplain sites may

well have represented alternative encampments to the sheltered sites when the valley's inhabitants were in micro-bands during the late summer and autumn. While direct evidence for the season in which these sites were occupied was not recovered, the presence of nutting stones, grinding slabs, and manos implies a late summer and autumn occupation. The late summer maturation of the fruits of native grasses and other edible plants in conjunction with the autumn nut drop would be consistent with the ground stone inventory. Furthermore, the locations of the sites, on what was then an active floodplain, would have been most accessible during the late summer and autumn when Hominy Creek was at its lowest level.

RECOMMENDATIONS

With exception to Bull Creek Shelter (34OS95) no additional studies are recommended for any of the 15 prehistoric sites that were investigated during Phase III.

The Williams Site (34OS160) is considered eligible for nomination to the National Register of Historic Places. Bull Creek Shelter (34OS95), a Plains Village occupation, displays bedrock features in the form of conical mortars and has a strong potential of containing organic evidence. The organic evidence may provide information on the chronology, economy, and enviroment of the site. The Williams Site (34OS160) contains evidence of numerous stratified Middle Woodland occupations which are radiocarbon dated to about A.D. 500. The site is the best example of such emphemeral floodplain occupations in the valley and has significantly contributed to our understanding of the Late Prehistoric settlement pattern for the area.

Due to their low artifact densities, degree of disturbance, and lack of datable materials the following sites are not considered eligible for nomination to the National Register: 34OS92, 34OS94, 34OS102, 34OS103, 34OS111, 34OS112, 34OS113, 34OS115, 34OS116, 34OS120, and 34OS141.

APPENDIX A

Ground Stone Artifacts from Hominy Creek Valley

Tammy Breckinridge and Celia Wetherill

Although ground stone implements are not restricted to the processing of plant foods, the focus and development of ground stone technology is most commonly associated with the processing of plant food resources in archaeological and ethnographic contexts (Kraybill, 1977). Given the considerable time-depth and broad cross-cultural association of ground stone artifacts with plant food processing, it is not surprising that those societies with economies that emphasize horticultural or wild plant products exhibit diverse and well developed ground stone industries.

The Late Prehistoric (A.D. 1-1,600) inhabitants of Hominy Creek Valley apparently habitually engaged in the processing of plant foods as reflected in the relatively diverse and abundant ground stone inventory of the sites. In that the Late Prehistoric occupation of the valley was coeval with an interval of economic transition specifically related to plant resources, as observed elsewhere on the Southern Plains (Wedel, 1974; Lintz, 1971), one might question whether this movement from plant food collection to production was reflected in the ground stone assemblages of Hominy Creek Valley. The Plains Woodland Period (A.D. 1-800) is normally associated with a hunting-gathering economy supplemented by limited cultigens, while the Plains Village Period economy rested more heavily on horticulture. Contrary to this generally recognized economic transition, previous economic reconstructions for the Late Prehistoric inhabitants of Hominy Creek Valley have pointed to a persistence of hunting-gathering subsistence strategies throughout the period without the introduction of horticulture (Henry, 1977c; 1978a). As yet, however, no attempt has been made to

examine the ground stone assemblages from the valley for temporal patterns that might assist in defining such a transition. For example, the addition of cultigens to the food resources of the valley should be reflected in the increased diversity and perhaps abundance of ground stone artifacts.

Typology of Ground Stone Artifacts and Inventory of the 1979 Investigation

A typology of ground stone implements was developed in order to understand the relationship of the form and function of these tools and to examine their temporal distributions in the sites. The morphology of tools seems to be primarily related to their function. Groundstone artifacts for plant processing in Hominy Creek Valley include bedrock mortars, grinding slabs, handstones, nutting or pitted stones, grooved stones and hammerstones.

1. Bedrocck Mortars - conical depressions in rock outcrops (10-20 cm diameter; 20-30 cm deep)

A mortar is a vessel or depression in which material is pounded or ground. Pestles are usually club-shaped implements, fashioned of wood or stone, that are used for pounding or grinding substances within mortars. There are no portable mortars or pestles represented at the sites. However, there are permanent embedded mortars on bedrock at six of the sites.

2. Grinding Slabs - Metates, Querns or Lower Stones

The Hominy Creek Valley grinding slabs are large, rectangular slabs of sandstone that have been pecked to shape. They have been ground on their obverse and/or inverse surfaces and may also have been used as a sharpening base (as evidenced by grooves on a previously ground surface).

   a. Flat or Slab - rectangular in shape and ground on one or both surfaces. Forty-three grinding stone fragments were found at Hominy Creek Valley.

3. Handstones - Manos, Mullers, or Upper Stones

Commonly made of medium or fine grain sandstone and rarely limestone. The Hominy Creek Valley handstones were made from sandstone having been pecked to roughly oval, circular or rectangular shapes and showing multiple grinding surfaces. The handstone assemblage consists of 23 handstone and handstone fragments or possible handstone fragments.

These can be classified as to two subtypes. Subtype (a) is typically oval or circular in shape and was used in a rotary motion as evidenced by grinding on the obverse and/or inverse surface and one to three lateral edges. It is small enough to fit easily in one hand. Subtype (b) is typically rectangular or loaf shaped and was used in a reciprocal back and forth motion as evidenced by grinding on the obverse and/or inverse surface and one to two lateral edges. It may also have depressions or pits on one or both surfaces. The two subtypes can be distinguished by their form, wear and size. Eddy (1979) has referred to these handstones as one-hand and two-hand manos respectively.

a. Eight fragments are represented at the Hominy Creek sites. Five are oval and three are circular and show grinding on the obverse and/or inverse surface and one to three lateral edges. One is ground on all edges. They range in size from 55.4 mm in length x 70.0 in width x 30.0 mm in thickness to 103.7 mm in length x 96.0 mm in width x 34.7 mm in thickness.

b. Two complete handstones and seven handstone fragments are represented at the sites. One complete handstone is ground on the obverse and inverse surfaces and the lateral edges to the obverse surface. It measures 125.4 mm x 58.4 mm x 42.4 mm and is rectangular in shape. The second complete handstone measures 140.0 mm x 99.0 mm x 47.9 mm and is ground on the obverse and inverse surfaces, and has five lateral sides to the obverse surface, all of which are ground. Seven handstone fragments show grinding on the obverse and/or inverse surface and one or two lateral edges. They range in size from 58.4 mm x 54.9 mm x 52.0 mm to 107.5 mm x 66.0 mm x 40.0 mm.

Five handstone fragments are of undetermined subtypes.

4. Nutting stones - roughly circular, triangular or rectangular in shape and may have previously been handstones.

One nutting stone (340S103) was recovered with ground obverse and inverse surfaces with a circular depression measuring 33.8 mm x 27.0 mm x 1.3 mm. Three other nutting stones were recovered (340S160); the one from 50-60 cm B.D. is ground on the obverse and inverse surfaces, with some grinding on two lateral edges, and is triangular in shape. The depression in the stone measures 26.5 mm x 22.6 mm x 2.5 mm. Two nutting stones were recovered from 70-80 cm B.D. The first one is diamond in shape, with a small amount of grinding on the obverse surface. There are two circular depressions: one measuring 28.8 mm x 27.6 mm x 12.0 mm found on the obverse surface, the second measuring 17.0 mm x 23.9 mm x 9.3 mm located on the inverse surface.

5. Hammerstones - large, round or elongated stones used to shape or modify manos, metates and other grinding implements and characterized by pits, crushing and irregular form.

One quartzite hammerstone was found at 30-40 cm B.D. and shows pecking on the edges. It measures 94.6 mm x 63.7 mm x 33.1 mm and is round in shape.

Survey of Ground Stone Artifacts in Hominy Creek and Birch Creek Valleys

In order to enlarge the inventory and examine the Late Prehistoric Period of the area for temporal patterns in ground stone artifacts, assemblages from Hominy Creek Valley and Birch Creek Valley have been classified according to the previously discussed typology.

The Hominy Creek Valley and Birch Creek Valley sites reveal similar ranges of ground stone artifacts within their respective assemblages, and similarly

Table 1

Dimensions of Groundstone
1979 Field Season[1]

Site	N	Length/mm	Width/mm	Thickness/mm
34OS92				
Groundstone Fragment	1	125.7	83.0	52.3
34OS103				
Nutting Stone	1	104.5	80.0	40.8
Handstone Fragments	2	60.0	42.4	22.8
		50.0	55.8	25.2
Possible Mano Fragments		143.8	111.2	64.1
34OS115				
Handstones	2	125.4	58.4	42.4
		140.0	99.0	47.9
Handstone Fragments	5	103.7	96.0	34.7
		77.4	102.7	37.7
		56.5	90.4	33.3
		55.4	70.0	30.0
		63.0	80.0	30.0
Possible Handstone Frag-	2	73.2	61.9	20.0
ments		109.3	87.3	23.6
34OS141 & 141A				
Grinding Slab Fragment	1	118.0	116.0	31.5
Possible Handstone Frag-	2	58.1	34.0	26.3
ments		57.0	17.5	29.0
34OS160				
(Block A)				
Handstone Fragments	4	58.4	54.9	52.0
		54.4	69.1	50.0
		53.7	45.6	45.6
		57.9	67.7	46.3
Hammerstone	1	94.6	63.7	33.1
Nutting Stone	1	106.8	80.7	47.0
34OS160				
(Block B)				
Nutting Stone	2	140.0	72.3	61.5
		105.7	90.0	85.0
Handstone Fragments	1	44.6	46.3	16.3
34OS160				
(Remainder of Site)				
Handstone Fragments	4	107.5	66.0	40.0
		90.0	36.7	30.0
		65.6	59.1	39.3
		74.7	57.4	54.6

[1]Prepared by Celia Wetherill, University of Tulsa

Table 1

Dimensions of Groundstone

Site	N	Length/mm	Width/mm	Thickness/mm
340S92				
Groundstone Fragment	1	125.7	83.0	52.3
340S103				
Nutting Stone	1	104.5	80.0	40.8
Mano Fragments	2	60.0	42.4	22.8
		50.0	55.8	25.2
Possible Mano Fragments	1	143.8	111.2	64.1
340S115				
Manos	2	125.4	58.4	42.4
		140.0	99.0	47.9
Mano Fragments	5	103.7	96.0	34.7
		77.4	102.7	37.7
		56.5	90.4	33.3
		55.4	70.0	30.0
		63.0	80.0	30.0
Possible Mano Fragments	2	73.2	61.9	20.0
		109.3	87.3	23.6
340S141 & 141A				
Metate Fragment	1	118.0	116.0	31.5
Possible Mano Fragment	2	58.1	34.0	26.3
		57.0	17.5	29.0
340S160 (Block A)				
Mano Fragments	4	58.4	54.9	52.0
		54.4	69.1	50.0
		53.7	45.6	45.6
		57.9	67.7	46.3
Hammerstone	1	94.6	63.7	33.1
Nutting Stone	1	106.8	80.7	47.0
340S160 (Block B)				
Nutting Stone	2	140.0	72.3	61.5
		105.7	90.0	85.0
Mano Fragments	1	44.6	46.3	16.3
340S160 (Remainder of Site)				
Mano Fragments	4	107.5	66.0	40.0
		90.0	36.7	30.0
		65.6	59.1	39.3
		74.7	57.4	54.6

display little variation between the Plains Woodland and Plains Village Periods (Table 2). An exception to the temporal homogeneity of the assemblages rests with the bedrock mortars. While bedrock mortars are not reported from any single component Plains Woodland Period sites, four single component Plains Village Period sites contain bedrocck mortars, and two multi-component, Plains Woodland - Plains Village Period sites exhibit bedrock mortars. Bedrock mortars, however, are cross-culturally associated with the pounding or grinding of nuts and not with the processing of maize or cereals (Kraybill, 1977; Clarke, 1976). The appearance of this ground stone variety in the Plains Village Period occupations of the valley is not therefore indicative of the introduction of horticulture.

Summary

Hominy Creek Valley is located in a zone of low oak-covered hills which form a boundary between the grasslands of the Plains to the west and the Oak-hickory forests to the east. This is an ecotone environment containing characteristic plant communities of the peripheral grassland and forest zones (Henry, et al, 1979).

Traditionally in this area a transition from hunting - gathering to horticulture has been observed. However, the investigations of the prehistoric sites of Hominy Creek Valley fail to furnish evidence for food production during the Late Prehistoric Period, although wild plant products have been recovered in quantity (Henry, 1978b). The absence of any direct evidence for horticulture (such as a sickle sheen, bison scapulae hoes, and pollen of domesticated plants) suggests that the inhabitants of the valley did not adopt agricultural subsistence patterns. Furthermore, an examination of the ground stone inventories

Table 2

Distribution of Ground Stone at
Hominy Creek Valley and Birch Creek Valley

Plains Village Period (ca. 800-1,600 A.D.)	Bedrock Mortars	Complete Grinding Slabs	Fragment Grinding Slabs	Complete Hand Stones	Fragment Hand Stones	Nutting or Pitted Stones	Grooved Stones	Hammer Stones
1. Copper head Cave (34 OS 85)	1	1	1		1	2		
2. Turkey Creek (34 OS 91)	2		1					
3. Bull Creek Shelter (34 OS 95)	2							
4. Cedar Creek Shelter (34 OS 98)			4			2	1	
5. Painted Shelter (34 OS 129) (Grooves, polished surfaces and small depressions are also present on the bedrock)	1							
6. Birch Bend (34 OS 132)	2							
7. Bird nest cave (34 OS 133)						1		
8. Sunny Shelter (34 OS 135) (9 small depressions are present on the bedrock)	1							
9. Spring Shelter (34 OS 193)						1	1	
Plains Woodland Period (ca. 1-800 A.D.)								
1. Oxbow Site (34 OS 92)			1					
2. Hominy Bend Site (34 OS 101)			3		1			1
3. 34 OS 103					3	1		
4. Big Hawk Shelter (34 OS 114)			4			1	1	
5. 34 OS 115				2	7			
6. 34 OS 141 &141a			1		2			
7. The Williams Site (34 OS 160)					9	3		1

of the Late Prehistoric sites in the area fail to reflect a change that would suggest the introduction of cultigens. The appearance of bedrock mortars during the Plains Village Period may indicate increased efficiency in nut processing in conjunction with a habitual seasonal reoccupation of the sites.

APPENDIX B

ADDITIONAL POLLEN STUDIES FROM HOMINY CREEK, OSAGE COUNTY, OKLAHOMA

Stephen A. Hall
North Texas State University

The pollen analytical investigations of 24OS85, 34OS98, and 34OS160 have failed to produce a firm record of vegetational reconstruction. The pollen grains at these three sites are badly preserved and, although pollen is present, the assemblages are too altered to provide a reliable picture of past vegetation.

Copperhead Cave (34OS85) The pollen samples were collected by D.O. Henry from layers A and B at the north wall of C17 (the upper two samples) and layers C,D, and E (lower 5 samples); the stratigraphy of the site is shown in Henry, 1978, p. 6. Only the upper 5 pollen spectra from the site yielded sufficient pollen for analysis. However, the pollen grains are poorly preserved and pollen concentration decreases with depth, similar to the situation at other Osage County sites, such as Painted Shelter and Big Hawk Shelter (Henry, Butler, and Hall, 1979; Henry, 1978). Frequencies of indeterminable pollen increase from 8 to over 50% (Table 1) from the upper sample to 80cm depth, while pollen concentration drops from 16,000 to 1500 grains per gram of dry sediment. At 120 to 130cm depth, pollen concentration is only 270 grains per gram.

The profiles from the Copperhead Cave pollen diagram (Figure 1) show a rise through time in oak, hickory, and elm frequencies. This trend in pollen frequencies may not have significance to vegetational reconstruction, however, owing to poor pollen preservation and to likely altered pollen counts due to large scale pollen destruction.

TABLE 1

Pollen Data for Copperhead Cave (34OS85)

	SAMPLE NUMBER #1	#2	#3	#4	#5	#6	#7
Grams processed	22.3	29.4	30.3	25.1	26.4	25.7	30.0
Total count	363	342	302	149	166	44	20
Lycopodium count*	46	18	81	133	108	64	61
Quercus	36.1%	45.6%	22.2%	18.8%	10.2%	(4)	(1)
Carya	22.9	18.7	3.3	7.4	3.0	(3)	-
Juglans	1.4	2.0	0.7	0.7	-	(1)	-
Ulmus	9.9	10.8	2.0	1.3	2.4	-	-
Fraxinus	1.4	4.4	0.3	-	-	-	(1)
Juniperus	-	-	0.3	-	-	-	-
Celtis	-	0.3	-	-	-	-	-
Pinus	1.1	1.5	1.3	1.3	-	-	-
Chenopodium	0.3	0.9	6.3	3.4	1.8	-	-
Aster	0.3	1.8	2.6	0.7	0.6	-	-
Ambrosia	12.2	7.3	11.6	10.1	13.3	(5)	(4)
Gramineae	1.9	3.5	4.6	0.7	0.6	(1)	-
Betula	0.3	-	-	-	-	-	-
Spores, undiff.	1.1	0.6	8.6	8.1	10.2	(2)	(4)
Unknown	3.3	2.6	4.0	1.3	-	-	-
Indeterminable	8.0	16.1	32.1	46.3	57.8	(26)	(10)
Concentration per gram	8,850	16,200	3,100	1,100	1,460	670	270

*25,000±1,000 Lycopodium spores added to each sample.

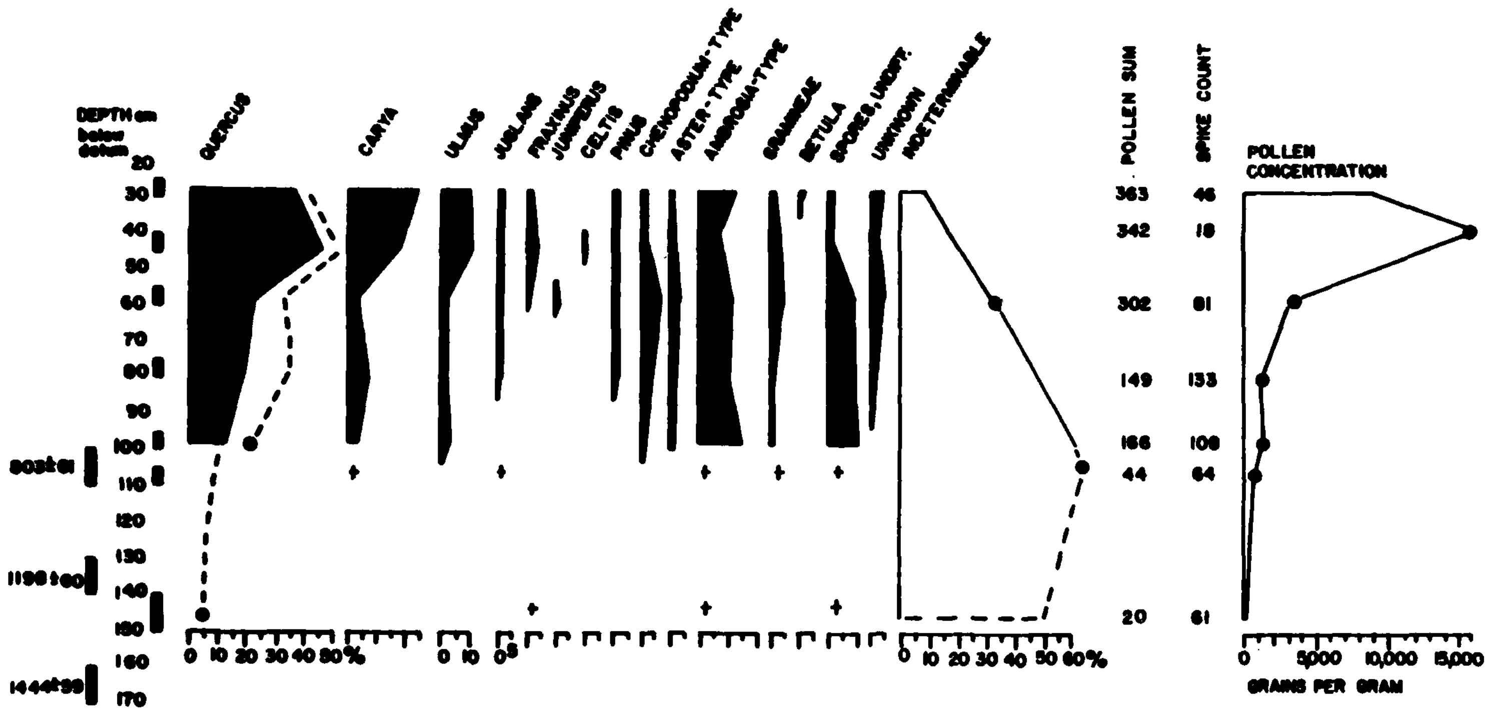

FIGURE 1. Pollen Diagram of Copperhead Cave (34OS85). Depth is normalized to datum and corresponds to the cm intervals shown in the Copperhead Cave Land Snail Diagram, Figure 24 in Hall, 1978. The upper two samples are shown in their approximately correct stratigraphic position although collected from a different locality within the site than the other samples.

Cedar Creek Shelter (34OS98) The close-interval pollen samples were collected from a single stratigraphic column from this site by the writer and D.O. Henry. Pollen deterioration at Cedar Creek Shelter is similar to that at Copperhead Cave discussed above (see Figure 2). Indeterminable grains are 50% (Table 2) of the counted pollen at 40cm depth, and pollen concentration drops from 1850 near the surface to less than 100 grains per gram at 45cm depth. The changing frequencies of the different pollen taxa cannot be reliably interpreted owing to poor preservation.

The Williams Site (34OS160) A series of pollen samples was collected from this alluvial site. One pilot sample from the occupation zone at 45-48cm depth was analyzed for pollen. It contained 580 grains per gram of dry sediment, and 57% of the counted grains were indeterminable (Table 3). The results from this one sample suggest that the pollen assemblages at the site are too altered for reliable interpretation.

Discussion

The pollen records from the above sites reflect the present-day oak-dominated Cross Timbers vegetation of eastern Osage County. However, the deteriorated condition of the pollen grains and the likely altered pollen assemblages do not justify application to the reconstruction of past vegetation.

The land snail faunas from Copperhead Cave and Cedar Creek Shelter were presented in an earlier report (Hall, 1978). It was hoped that the land snail and pollen records would be complementary; however, the deterioration of the pollen grains at the sites eliminates the possibility of reliable comparison.

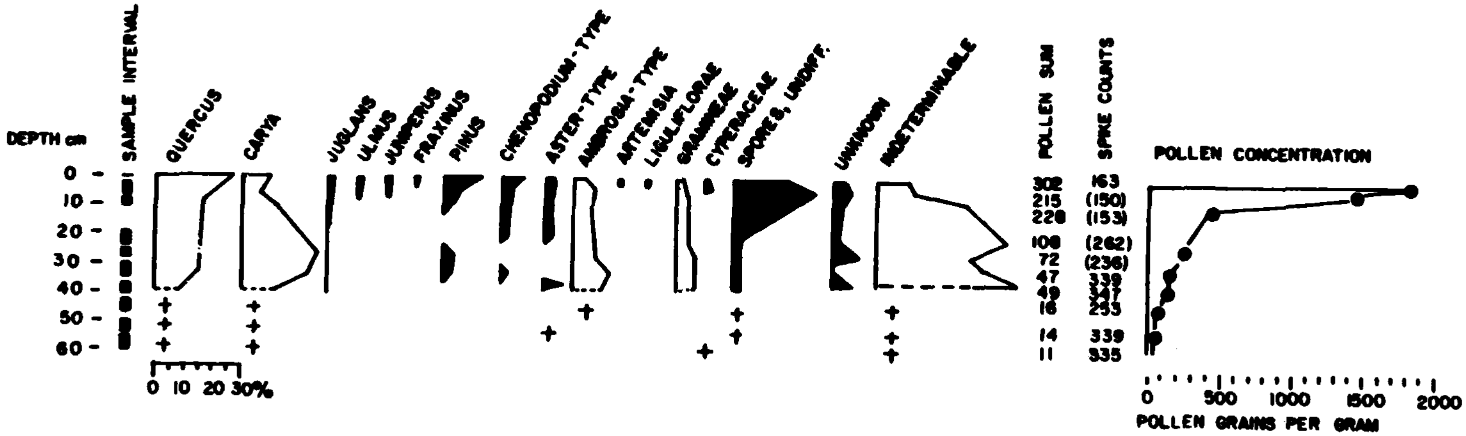

FIGURE 2. Pollen Diagram from Cedar Creek Shelter (34OS98). Spike counts in parentheses are from block-counting method in calculating pollen concentration.

TABLE 2

Pollen Data for Cedar Creek Shelter (34OS98)

	SAMPLE DEPTH (cm)									
	0-1	2-6	7-10	19-24	25-28	31-35	37-41	43-47	50-54	55-60
Total count	302	215	228	108	72	47	49	16	14	11
Lycopodium count**	163 -	150 213	153 65	262 63	236 51	339 47	347 49	253 16	339 14	335 11
Quercus (%)	26.2	21.4	16.2	15.7	15.3	14.9	8.2	+	+	+
Carya	8.6	5.1	10.5	21.3	26.4	23.4	12.2*	+	+	+
Juglans	1.3	0.5	0.4	-	-	-	-	-	-	-
Ulmus	1.0	0.5	-	-	-	-	-	-	-	-
Fraxinus	0.7	-	-	-	-	-	-	-	-	-
Juniperus	0.3	0.5	-	-	-	-	-	-	-	-
Pinus	13.9	5.6	4.4	-	2.8	2.1	-	-	-	-
Chenopodium-type	6.3	2.8	2.6	1.9	-	2.1	-	-	-	-
Aster-type	2.0	2.8	1.3	1.9	-	-	6.1	-	+	-
Ambrosia-type	3.0	7.0	5.3	6.5	6.9	12.8	10.2	+	-	-
Artemisia	0.5	-	-	-	-	-	-	-	-	-
Liguliflorae	0.3	-	-	-	-	-	-	-	-	-
Gramineae	2.0	3.7	3.9	3.7	4.2	6.4	6.1	-	-	-
Cyperaceae	1.0	2.3	-	-	-	-	-	-	-	+
Spores, undiff.	17.9	28.8	19.3	1.9	2.8	2.1	2.0	+	+	-
Unknown	4.0	5.6	3.1	1.9	9.7	-	6.1	-	-	-
Indeterminable	11.3	13.5	31.1	45.4	31.9	36.2	49.0	+	+	+
Concentration per gram	1,853	1,420	425	240	216	139	141	63	41	33

Note: 25.0 grams of each sample were processed.
*Contaminated
**25,000±1,000 *Lycopodium* spores added to each sample.

TABLE 3

Pollen Data for the Williams Site (34OS160)
45-48 cm in Depth

Grams processed	29.4
Lycopodium added	25,000±1,000
Lycopodium count	62
Quercus count	4
Carya count	4
Juglans count	1
Ambrosia count	8
Aster count	1
Indeterminable	24 (57.1%)
Total count	42
Concentration per gram	580

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